Aero Design Ltd.
604-483-AERO (2376)

9888A Malaspina Road
Powell River, BC, Canada, V8A 0G3

02 October 2017

Transport Canada
Aircraft Certification Division
Suite 620
800 Burrard Street
Vancouver, BC
V6Z 2J8

Attn: Michael Chan

Your File :
Our File : 940

Re: Airbus Helicopters AS350/AS355 Cargo Baskets – Chinese STC Application

Michael,

Please find attached the following documents in support of application for a new Chinese STC:

Modification Approval Request Application Form		
Transport Canada STC	SH08-16	Issue 5
FAA STC	SR02680NY	Amdt. 22/02/17
EASA STC	10060494	Rev. 0
Certification Plan	CP940	Rev. 1
Instructions for Continued Airworthiness	ICA764.90	Rev. 7
MSI 53 Review for ICA764.90 Rev. 6		
Flight Manual Supplement	FMS764.91	Rev. 4
Declaration of Conformity		
Signed Undertaking		
Document Control List (Provisions Installation)	DCL786-1	Rev. 5
Attachment Provisions Installation	78602	Rev. 1
Attachment Provisions Installation (Cargo Pod Compatible)	78603	Rev. 2
Service Bulletin – Cargo Pod Clamps	SB786.01	Rev. 0
Document Control List (Provision Fabrication)	DCL786-3	Rev. 5
Clamp Fabrication	78620	Rev. 5
Clamp Fabrication (Cargo Pod Compatible)	78622	Rev. 0
Aft Beam Fabrication	78633	Rev. 1
Forward Beam Fabrication	78635	Rev. 0
Certification Plan – Minor Changes	CP-SH08-16	Rev. 1
Engineering Report	ER786.01	Rev. 0
Statement of Compliance	SOC1607	Rev. NC
Document Control List (Short Basket Installation)	DCL776-1	Rev. 4
Cargo Basket Installation (Short Basket)	77601	Rev. 4

Document Control List (Short Basket Assembly)	DCL776-3	Rev. 3
Cargo Basket Assembly	77610	Rev. 2
Basket Fabrication	77611	Rev. 2
Lid Fabrication	77612	Rev. 2
Placard	77627	Rev. 1
Document Control List (Medium Basket Installation)	DCL764-1	Rev. 4
Cargo Basket Installation (Medium Basket)	76401	Rev. 4
Document Control List (Medium Basket Assembly)	DCL764-3	Rev. 4
Cargo Basket Assembly	76410	Rev. 3
Basket Fabrication	76411	Rev. 3
Lid Fabrication	69812	Rev. 4
Hoop	76421	Rev. 1
Attachment Hoop	76422	Rev. 1
Attachment Hoop	76423	Rev. 3
Placard	76427	Rev. 2
Document Control List (Long Basket Installation)	DCL784-1	Rev. 4
Cargo Basket Installation (Long Basket)	78401	Rev. 4
Document Control List (Long Basket Assembly)	DCL784-3	Rev. 4
Cargo Basket Assembly	78410	Rev. 2
Basket Fabrication	78411	Rev. 3
Lid Fabrication	78412	Rev. 2
Placard	78427	Rev. 2
Document Control List (XL Basket Installation)	DCL940-1	Rev. 2
Cargo Basket Installation (XL Basket)	94001	Rev. 1
Document Control List (XL Basket Assembly)	DCL940-3	Rev. 2
Cargo Basket Assembly	94010	Rev. 1
Basket Fabrication	94011	Rev. 1
Lid Fabrication	94012	Rev. 1
Attachment Hoop	94023	Rev. 1
Placard	94027	Rev. 1
Hoop	94030	Rev. 1
Engineering Report	ER940.01	Rev. 0
Engineering Report	ER842.01	Rev. 0
Flight Test Report	FTR940.03	Rev. 1
Flight Test Report (TCCA)	(none)	(none)
Statement of Compliance	SOC940	Rev. 0
Modification to S/N 94001-57		
Certification Plan	CP940.90	Rev. 0
Engineering Report	ER940.90	Rev. 0
Test Report	TR940.91	Rev. 0
Service Instructions	SI940.91	Rev. 0
Statement of Compliance	SOC940.90	Rev. 0
Basket Modification	94091	Rev. 0
Lid Modification	94092	Rev. 0

Aero Design Ltd.
604-483-AERO (2376)

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Document Control List (Modifications)	DCL704	Rev. 9
Lid Door Modification	70402	Rev. 2
Auxiliary Latch Modification	70403	Rev. 5
Lid Step Modification	70405	Rev. 4
Front End Cutout – AS350 / AS355	70406	Rev. 3
Hangar Wheel Installation	70408	Rev. 1
Hangar Wheel Assembly	70428	Rev. 1
Hangar Wheel Parts	70438	Rev. 1
Common Component Drawings (all models)		
Spacer	49215	Rev. 1
Spacer	49216	Rev. 1
Lug	69823	Rev. 2
Lid Brace Installation	84240	Rev. 0
Handle Installation	84255	Rev. 2
Handle Bar Assembly	84261	Rev. 2
Basket Handle Provisions Assembly	84262	Rev. 2
Lid Handle Provisions Assembly	84263	Rev. 0
Handle Lever	84265	Rev. 2
Handle Bracket	84267	Rev. 1
Bushing	84272	Rev. 1
Lid Bracket	36273	Rev. 2
Bushing	36274	Rev. 3
Bushing	36275	Rev. 4
Handle Bar	36277	Rev. 1
Spring	36278	Rev. 3
Lid Brace	36280	Rev. 3
Common Reports (764 / 776 / 784)		
Engineering Report	ER764.01	Rev. 0
Test Report	TR764.02	Rev. 0
Flight Test Plan and Report	FTP764.03	Rev. 0
Engineering Report	ER764.04	Rev. 0
Engineering Report	ER764.05	Rev. 0
Flight Test Report (TCCA)	(none)	(none)

A CD with the above data is included for submission to CAAC.

Regards,

Jeff Clarke, P.Tech.(Eng.)
Vice President

Encl.

Transport Canada / Transports Canada

DESIGN CHANGE APPROVAL APPLICATION

DEMANDE D'APPROBATION D'UNE MODIFICATION DE LA CONCEPTION

Legal name and address of applicant Nom et adresse légal du demandeur	Legal name and address of prospective holder Nom et adresse légal du titulaire éventuel	Name and address for billing purposes (if different than applicant) Nom et adresse aux fins de facturation (si différent du demandeur)
Aero Design Ltd. 9888A Malaspina Road Powell River, BC, Canada V8A 0G3	Aero Design Ltd. 9888A Malaspina Road Powell River, BC, Canada V8A 0G3	

Identification of aeronautical product / Identification du produit aéronautique

Make / Marque	Model / Modèle	Registration / Immatriculation	Serial No. / N° du série	Part No. / N° de la pièce
Airbus Helicopters	AS350/355 (all)	All eligible	All eligible	

Request for (check appropriate box) / Objet de la demande (Cochez les carrés selon le cas)

- ☐ STC / CTS
- ☐ STC (single serial number) / CTS (numéro de série simple)
- ☐ STC (multiple serial numbers) / CTS (numéros de série multiples)
- ☐ Type Certificate Revision / Revision de certificat de type
- ☑ Revision / Révision — No. / N° SH08-16 — Current Issue / Édition active 5
- ☐ Repair Design Approval (RDA) / Approbation de la conception de réparation (ACR)
- ☐ Repair Design Approval - Process Repair / ACR - Processus de réparation
- ☐ Part Design Approval (PDA) / Approbation de la conception de pièce (ACP)

Type Design Examination by Foreign Authority / Examen de la définition de type par autorité étrangère

- ☑ Application to a foreign authority is requested / La demande à une autorité étrangère est demandée.
- ☐ Type design examination of foreign change / Examen de la définition de type modification étrangère

Identify / Identifier: China - new STC

- ☐ Restricted Category / Catégorie restreinte — Type of Operation / Type d'opération

Title and brief description of modification, repair or replacement part, including effects of changes (use additional pages if necessary). Refer to CAR 521.155(b)(i) for details.
Titre et brève description de la modification, de la réparation ou de la pièce de rechange, y compris les effets des changements (utiliser des feuilles supplémentaires si nécessaire). Référez-vous à RAC 521.155(b)(i) pour des détails.

Installation of mounting provisions and cargo basket.
Installation of mounting provisions on landing gear cross tubes. Installation of cargo basket (4 different sizes) on mounting provisions.

Applicable Type Certificate (TC) / Certificat de type (CT) pertinent

TC No. / N° de CT	Issue No. / N° de l'édition	Identify State of Design / Identifier l'état de conception
H-83, H-87	23, 9	EASA

The applicant is responsible for the control of product manufacture / Le demandeur est responsable du contôle de la fabrication du produit

☑ Yes / Oui ☐ No / Non — If no, identify who is responsible / Si non, identifier qui est responsable

Documentation to be submitted Documentation à soumettre	Applicant Demandeur Submitted Soumis Yes Oui	 No Non
Proposed certification basis Proposition de base de certification		✓
Certification plan in accordance with CAR 521.155(d) Plan de certification selon RAC 521.155(d)		✓

Applicant's remarks / Remarques du demandeur

Application to CAAC in China for a new STC

I hereby certify that the information contained herein is correct and complete. I agree to pay charges as prescribed in Part 1, Subpart 4 of the CARs (CAR 104-Charges).

Je certifie que les renseignements figurant ci-dessus sont exacts et complets. Je m'engage à payer les redevances prescrites à la sous-partie 4 de la partie I du RAC (sous-partie 104 du RAC - Redevances).

Name and Signature of Applicant / Nom et signature du demandeur	Title / Poste	Date (yyyy-mm-dd) / Date (aaaa-mm-jj)
JEFF CLARKE JC	VICE PRESIDENT	2017-10-02

Canada

Attachment 1 - Application Form for VTC/VSTC

中 国 民 用 航 空 局

CIVIL AVIATION ADMINISTRATION OF CHINA

民用航空产品型号认可申请书

APPLICATION FOR VALIDATION OF TYPE CERTIFICATES OF IMPORTED CIVIL AVIATION PRODUCT

1. Name of applicant AERO DESIGN LTD.

2. Address of applicant 9888A MALASPINA ROAD, POWELL RIVER, BC, CANADA V8A 0G3

3. Purpose of this application:

☐ Validation of Type Certificate ☒ Validation of Supplemental type certificate

☐ Validation of TC (concurrent) ☐ Validation of STC (using B-registered aircraft)

4. For Validation of type certificate, complete the following items:

Model designation applied for

Attachments (fill in the appropriate ☐ with X):

☐ Description of design feature and basic data

☐ A copy of Type Certificate

☐ A copy of TC Data Sheet

☐ A copy of Issue Papers

☐ A copy of Compliance Check List

☐ Available information on China market potential and the schedule for the first delivery

☐ Any other necessary data required by the CAAC

Application for Validation of Type Certificates of Imported Civil Aviation Product (Cont.)

5. For supplemental type certificate complete the following items:

Model designation of product to be modified

AIRBUS HELICOPTERS AS350 B, B1, B2, B3, BA AS355 E, F, F1, F2, N, NP

Description of type design change

INSTALLATION OF EXTERNAL ATTACHMENT PROVISIONS AND CARGO BASKET

Aircraft register number and/or production series number

NONE

Attachments (fill in the appropriate □ with X):

- [x] Description of the modification design feature and basic data
- [x] A copy of Supplemental Type Certificate TCCA SH08-16
- [x] A copy of certification basis
- [ ] A copy of Issue Papers
- [x] A copy of Compliance check List
- [ ] The schedule for the first delivery to China

6. The point of the contact:

Name	JEFF CLARKE	Tel.	604 483 2376
Title	VICE PRESIDENT	Fax.	604 483 2372
E-mail	jeff@arrodesign.ca	ZIP	

7. I certify that the statement of this application and attachments furnished herein are correct and without any error.

Jeff Clark. (Signature)

Title VICE PRESIDENT

Date 08 NOV 2017

Aero Design Ltd.
604-483-AERO (2376)

9888A Malaspina Road
Powell River, BC, Canada, V8A 0G3

02 October 2017

Transport Canada
Aircraft Certification Division
Suite 620
800 Burrard Street
Vancouver, BC
V6Z 2J8

Attn: Michael Chan

Your File :
Our File : 827

Re: Airbus Helicopters AS350/AS355 Cabin Steps – Chinese STC application

Michael,

Please find attached the following documents in support of application for a new Chinese STC:

Modification Approval Request Application Form		
Transport Canada STC	SH09-38	Issue 4
FAA STC	SR02770NY	26/02/16
EASA STC	10060496	Rev. 0
Certification Plan	CP827	Rev. 1
Declaration of Conformity		
Signed Undertaking		
Document Control List (Quick Release Maintenance Steps Installation)	DCL827-1	Rev. 6
Quick Release Maintenance Step Installation	82701	Rev. 2
Extended Quick Release Maintenance Step Installation	82702	Rev. 2
Flight Manual Supplement	FMS827.90	Rev. 4
Instructions for Continued Airworthiness	ICA827.91	Rev. 5
MSI 53 Review of ICA827.91 Rev. 5		
Document Control List (Quick Release Maintenance Steps Fabrication)	DCL827-11	Rev. 4
Step Assembly	82716	Rev. 1
Step Bracket Fabrication	82722	Rev. 1
Extended Step Assembly	82711	Rev. 1
Step Bracket Fabrication	82720	Rev. 2
Engineering Report	ER827.02	Rev. 0
Statement of Compliance	SOC827-1	Rev. 0
Document Control List (Maintenance Peg Step Installation and Fabrication)	DCL827-2	Rev. 4
Maintenance Peg Step Installation	82707	Rev. 2
Instructions for Continued Airworthiness	ICA827.93	Rev. 3
MSI 53 Review of ICA827.93 Rev. 3		
Step Assembly	82740	Rev. 2

Aero Design Ltd.
604-483-AERO (2376)

9888A Malaspina Road
Powell River, BC, Canada, V8A 0G3

Engineering Report	ER827.01	Rev. 2
Statement of Compliance	AE827-2	Rev. 2
Document Control List (Fixed Steps Installation)	DCL827-3	Rev. 7
Long Cabin Step Installation	82705	Rev. 2
Short Cabin Step Installation	82706	Rev. 2
Full Length Cabin Step Installation	82709	Rev. 1
Short Commuter Step Installation	82750	Rev. 1
Long Commuter Step Installation	82751	Rev. 1
Full Length Commuter Step Installation	82752	Rev. 1
Short Cabin Step Installation – Dart Conversion	82770	Rev. 1
Long Cabin Step Installation – Dart Conversion	82771	Rev. 1
Short Cabin Step Installation – Dart Conversion	82772	Rev. 1
Long Cabin Step Installation – Dart Conversion	82773	Rev. 1
Instructions for Continued Airworthiness	ICA827.92	Rev. 4
MSI 53 Review of ICA827.92 Rev. 4		
Document Control List (Fixed Steps Fabrication)	DCL827-13	Rev. 6
Short Cabin Step Assembly	82715	Rev. 2
Long Cabin Step Assembly	82717	Rev. 1
Commuter Cabin Step Assembly	82718	Rev. 2
Extra Short Cabin Step Assembly	82719	Rev. 0
Bracket Fabrication	82723	Rev. 2
Short Cabin Step Parts Fabrication	82733	Rev. 2
Cabin Step Parts Fabrication	82734	Rev. 1
Commuter Cabin Step Parts Fabrication	82736	Rev. 1
Commuter Step Assembly	82760	Rev. 1
Bracket Fabrication	82765	Rev. 2
Bracket (Dart Long)	82780	Rev. 1
Cap (Dart Long)	82781	Rev. 1
Bracket (Dart Short)	82782	Rev. 1
Cap (Dart Short)	82783	Rev. 1
Cap (Old Profile, Dart Short)	82784	Rev. 1
Bracket (Old Profile, Dart Long)	82785	Rev. 1
Cap (Old Profile, Dart Long)	82786	Rev. 1
Engineering Report	ER827.02	Rev. 0
Engineering Report	ER827.03	Rev. 1
Flight Test Report (TCCA)	(none)	(none)
Statement of Compliance	SOC827-3	Rev. 0

A CD with the above data is included for submission to CAAC.

Regards,

Jeff Clarke, P.Tech.(Eng.)
Vice President

Encl.

Transport Canada / Transports Canada

DESIGN CHANGE APPROVAL APPLICATION

DEMANDE D'APPROBATION D'UNE MODIFICATION DE LA CONCEPTION

Legal name and address of applicant Nom et adresse légal du demandeur	Legal name and address of prospective holder Nom et adresse légal du titulaire éventuel	Name and address for billing purposes (if different than applicant) Nom et adresse aux fins de facturation (si différent du demandeur)
Aero Design Ltd. 9888A Malaspina Road Powell River, BC, Canada V8A 0G3	Aero Design Ltd. 9888A Malaspina Road Powell River, BC, Canada V8A 0G3	

Identification of aeronautical product / Identification du produit aéronautique

Make / Marque	Model / Modèle	Registration / Immatriculation	Serial No. / N° du série	Part No. / N° de la pièce
Airbus Helicopters	AS350/355 (all)	All eligible	All eligible	

Request for (check appropriate box) / Objet de la demande (Cochez les carrés selon le cas)

- ☐ STC / CTS
- ☐ STC (single serial number) / CTS (numéro de série simple)
- ☐ STC (multiple serial numbers) / CTS (numéros de série multiples)
- ☐ Type Certificate Revision / Revision de certificat de type
- ☑ Revision / Révision — No. / N° SH09-38 — Current Issue / Édition active 4
- ☐ Repair Design Approval (RDA) / Approbation de la conception de réparation (ACR)
- ☐ Repair Design Approval - Process Repair / ACR - Processus de réparation
- ☐ Part Design Approval (PDA) / Approbation de la conception de pièce (ACP)

Type Design Examination by Foreign Authority / Examen de la définition de type par autorité étrangère

- ☑ Application to a foreign authority is requested / La demande à une autorité étrangère est demandée.
- ☐ Type design examination of foreign change / Examen de la définition de type modification étrangère

Identify / Identifier: China - new STC

☐ Restricted Category / Catégorie restreinte — Type of Operation / Type d'opération

Title and brief description of modification, repair or replacement part, including effects of changes (use additional pages if necessary). Refer to CAR 521.155(b)(i) for details.
Titre et brève description de la modification, de la réparation ou de la pièce de rechange, y compris les effets des changements (utiliser des feuilles supplémentaires si nécessaire). Référez-vous à RAC 521.155(b)(i) pour des détails.

Installation of quick release maintenance step on mounting provisions installed in accordance with STC SH08-16; installation of maintenance peg step on aft cross tube; installation of fixed cabin steps on landing gear

Applicable Type Certificate (TC) / Certificat de type (CT) pertinent

TC No. / N° de CT	Issue No. / N° de l'édition	Identify State of Design / Identifier l'état de conception
H-83, H-87	23, 9	EASA

The applicant is responsible for the control of product manufacture / Le demandeur est responsable du contôle de la fabrication du produit

☑ Yes / Oui ☐ No / Non — If no, identify who is responsible / Si non, identifier qui est responsable

Documentation to be submitted Documentation à soumettre	Applicant Demandeur Submitted Soumis Yes Oui	No Non
Proposed certification basis Proposition de base de certification		✓
Certification plan in accordance with CAR 521.155(d) Plan de certification selon RAC 521.155(d)		✓

Applicant's remarks / Remarques du demandeur

Application to CAAC in China for a new STC

I hereby certify that the information contained herein is correct and complete. I agree to pay charges as prescribed in Part 1, Subpart 4 of the CARs (CAR 104-Charges).

Je certifie que les renseignements figurant ci-dessus sont exacts et complets. Je m'engage à payer les redevances prescrites à la sous-partie 4 de la partie I du RAC (sous-partie 104 du RAC - Redevances).

JEFF CLARKE JC — Name and Signature of Applicant / Nom et signature du demandeur

VICE PRESIDENT — Title / Poste

2017-10-02 — Date (yyyy-mm-dd) / Date (aaaa-mm-jj)

Canada

Attachment 1 - Application Form for VTC/VSTC

中 国 民 用 航 空 局

CIVIL AVIATION ADMINISTRATION OF CHINA

民用航空产品型号认可申请书

APPLICATION FOR VALIDATION OF TYPE CERTIFICATES OF IMPORTED CIVIL AVIATION PRODUCT

1. Name of applicant AERO DESIGN LTD.

2. Address of applicant 9858A MALASPINA ROAD, POWELL RIVER, BC, CANADA V8A 0G3

3. Purpose of this application:

☐ Validation of Type Certificate ☒ Validation of Supplemental type certificate

☐ Validation of TC (concurrent) ☐ Validation of STC (using B-registered aircraft)

4. For Validation of type certificate, complete the following items:

Model designation applied for

Attachments (fill in the appropriate ☐ with X):

☐ Description of design feature and basic data

☐ A copy of Type Certificate

☐ A copy of TC Data Sheet

☐ A copy of Issue Papers

☐ A copy of Compliance Check List

☐ Available information on China market potential and the schedule for the first delivery

☐ Any other necessary data required by the CAAC

(见背面 See REVERSE SIDE)

Application for Validation of Type Certificates of Imported Civil Aviation Product (Cont.)

5. For supplemental type certificate complete the following items:

Model designation of product to be modified

AIRBUS HELICOPTERS AS355 B, B1, B2, B3, BA AS355 E, F, F1, F2, N, NP

Description of type design change

INSTALLATION OF QUICK RELEASE MAINTENANCE STEP; INSTALLATION OF MAINTENANCE PEG STEP; INSTALLATION OF FIXED CABIN STEP

Aircraft register number and/or production series number

NONE

Attachments (fill in the appropriate □ with X):

- [X] Description of the modification design feature and basic data
- [X] A copy of Supplemental Type Certificate TCCA SH09-38
- [X] A copy of certification basis
- [ ] A copy of Issue Papers
- [X] A copy of Compliance check List
- [ ] The schedule for the first delivery to China

6. The point of the contact:

Name	JEFF CLARKE	Tel.	604 483 2376
Title	VICE PRESIDENT	Fax.	604 483 2372
E-mail	jeff@aerodesign.ca	ZIP	

7. I certify that the statement of this application and attachments furnished herein are correct and without any error.

(Signature)

Title VICE PRESIDENT

Date 08 NOV 2017

Aero Design Ltd.
604-483-AERO (2376)

9888A Malaspina Road
Powell River, BC, Canada, V8A 0G3

02 October 2017

Transport Canada
Aircraft Certification Division
Suite 620
800 Burrard Street
Vancouver, BC
V6Z 2J8

Attn: Michael Chan

Your File :
Our File : 1002

Re: Airbus Helicopters AS350/AS355 Bicycle Racks – China STC Application

Michael,

Please find attached the following documents in support of application for a new Chinese STC:

Modification Approval Request Application Form		
Transport Canada STC	SH16-29	Issue 1
EASA STC	10060495	Rev. 1
FAA STC	SR03913NY	Amdt. 15/05/17
Document Control List (Bicycle Rack Installation)	DCL1002-1	Rev. 0
Quick Release Bicycle Rack Installation	100201	Rev. 0
Instructions for Continued Airworthiness	ICA1002.90	Rev. 0
MSI 53 Review for ICA1002.90 Rev. 0		
Flight Manual Supplement	FMS1002.91	Rev. 0
Document Control List (Bicycle Rack Fabrication)	DCL1002-11	Rev. 0
Bicycle Rack Assembly	100210	Rev. 0
Rack Base Fabrication	100215	Rev. 0
Moving Frame Fabrication	100220	Rev. 0
Fixed Frame Fabrication	100221	Rev. 0
Cam Fabrication	100222	Rev. 0
Roller Fabrication	100223	Rev. 0
Bushing Fabrication	100224	Rev. 0
Strap Fabrication	100225	Rev. 0
Threaded Bushing Fabrication	100226	Rev. 0
Placard	100227	Rev. 0
Beam	100230	Rev. 0
Certification Plan	CP1002	Rev. 3
Declaration of Conformity	DOC1002	Rev. 0
Engineering Report	ER1002.01	Rev. 1
Flight Test Plan and Report	FTP1002.03	Rev. 0
Flight Test Plan and Report	FTP1002.04	Rev. 1

Aero Design Ltd.
604-483-AERO (2376)

9888A Malaspina Road
Powell River, BC, Canada, V8A 0G3

Signed Undertaking	SU1002	Rev. 0
Statement of Compliance	SOC1002-1	Rev. 0
Statement of Compliance	SOC1002-2	Rev. 1
Test Report	TR1002.02	Rev. 0

A CD with the above data is included for submission to CAAC.

Regards,

Jeff Clarke, P.Tech.(Eng.)
Vice President

Encl.

Transport Canada / Transports Canada

DESIGN CHANGE APPROVAL APPLICATION

DEMANDE D'APPROBATION D'UNE MODIFICATION DE LA CONCEPTION

Legal name and address of applicant Nom et adresse légal du demandeur	Legal name and address of prospective holder Nom et adresse légal du titulaire éventuel	Name and address for billing purposes (if different than applicant) Nom et adresse aux fins de facturation (si différent du demandeur)
Aero Design Ltd. 9888A Malaspina Road Powell River, BC, Canada V8A 0G3	Aero Design Ltd. 9888A Malaspina Road Powell River, BC, Canada V8A 0G3	

Identification of aeronautical product / Identification du produit aéronautique

Make / Marque	Model / Modèle	Registration / Immatriculation	Serial No. / N° du série	Part No. / N° de la pièce
Airbus Helicopters	AS350/355 (all)	All eligible	All eligible	

Request for (check appropriate box) / Objet de la demande (Cochez les carrés selon le cas)

- ☐ STC / CTS
- ☐ STC (single serial number) / CTS (numéro de série simple)
- ☐ STC (multiple serial numbers) / CTS (numéros de série multiples)
- ☐ Type Certificate Revision / Revision de certificat de type
- ☑ Revision / Révision — No. / N° SH16-29 — Current Issue / Édition active 1
- ☐ Repair Design Approval (RDA) / Approbation de la conception de réparation (ACR)
- ☐ Repair Design Approval - Process Repair / ACR - Processus de réparation
- ☐ Part Design Approval (PDA) / Approbation de la conception de pièce (ACP)

Type Design Examination by Foreign Authority / Examen de la définition de type par autorité étrangère

- ☑ Application to a foreign authority is requested / La demande à une autorité étrangère est demandée.
- ☐ Type design examination of foreign change / Examen de la définition de type modification étrangère

Identify / Identifier: China - new STC

☐ Restricted Category / Catégorie restreinte — Type of Operation / Type d'opération

Title and brief description of modification, repair or replacement part, including effects of changes (use additional pages if necessary). Refer to CAR 521.155(b)(i) for details.
Titre et brève description de la modification, de la réparation ou de la pièce de rechange, y compris les effets des changements (utiliser des feuilles supplémentaires si nécessaire). Référez-vous à RAC 521.155(b)(i) pour des détails.

Quick Release Bicycle Rack Installation - Installation of quick release bicycle rack on mounting provisions installed in accordance with STC SH08-16.

Applicable Type Certificate (TC) / Certificat de type (CT) pertinent

TC No. / N° de CT	Issue No. / N° de l'édition	Identify State of Design / Identifier l'état de conception
H-83, H-87	23, 9	EASA

The applicant is responsible for the control of product manufacture / Le demandeur est responsable du contôle de la fabrication du produit

☑ Yes / Oui ☐ No / Non — If no, identify who is responsible / Si non, identifier qui est responsable

Documentation to be submitted Documentation à soumettre	Applicant Demandeur Submitted Soumis Yes Oui	 No Non
Proposed certification basis Proposition de base de certification		✓
Certification plan in accordance with CAR 521.155(d) Plan de certification selon RAC 521.155(d)		✓

Applicant's remarks / Remarques du demandeur

Application to CAAC in China for new STC

I hereby certify that the information contained herein is correct and complete. I agree to pay charges as prescribed in Part 1, Subpart 4 of the CARs (CAR 104-Charges).

Je certifie que les renseignements figurant ci-dessus sont exacts et complets. Je m'engage à payer les redevances prescrites à la sous-partie 4 de la partie I du RAC (sous-partie 104 du RAC - Redevances).

Name and Signature of Applicant / Nom et signature du demandeur	Title / Poste	Date (yyyy-mm-dd) / Date (aaaa-mm-jj)
JEFF CLARKE Jeff Clarke.	VICE PRESIDENT	2017-10-02

26-0469 (1007-06)

Canada

Attachment 1 - Application Form for VTC/VSTC

中 国 民 用 航 空 局

CIVIL AVIATION ADMINISTRATION OF CHINA

民用航空产品型号认可申请书

APPLICATION FOR VALIDATION OF TYPE CERTIFICATES OF IMPORTED CIVIL AVIATION PRODUCT

1. Name of applicant AERO DESIGN LTD.

2. Address of applicant 9865A MALASPINA ROAD, POWELL RIVER, BC, CANADA, V8A 0G3

3. Purpose of this application:

☐ Validation of Type Certificate ☒ Validation of Supplemental type certificate

☐ Validation of TC (concurrent) ☐ Validation of STC (using B-registered aircraft)

4. For Validation of type certificate, complete the following items:

Model designation applied for

Attachments (fill in the appropriate ☐ with X):

☐ Description of design feature and basic data

☐ A copy of Type Certificate

☐ A copy of TC Data Sheet

☐ A copy of Issue Papers

☐ A copy of Compliance Check List

☐ Available information on China market potential and the schedule for the first delivery

☐ Any other necessary data required by the CAAC

Application for Validation of Type Certificates of Imported Civil Aviation Product (Cont.)

5. For supplemental type certificate complete the following items:

Model designation of product to be modified

AIRBUS HELICOPTERS AS350 B, B1, B2, B3, BA AS355 E, F, F1, F2, N, NP

Description of type design change

INSTALLATION OF QUICK RELEASE BICYCLE RACKS

Aircraft register number and/or production series number

NONE

Attachments (fill in the appropriate □ with X):

- [X] Description of the modification design feature and basic data
- [X] A copy of Supplemental Type Certificate TCCA SH16-29
- [X] A copy of certification basis
- [ ] A copy of Issue Papers
- [X] A copy of Compliance check List
- [ ] The schedule for the first delivery to China

6. The point of the contact:

Name	JEFF CLARKE	Tel.	604 483 2376
Title	VICE PRESIDENT	Fax.	604 483 2372
E-mail	jeff@aerodesign.ca	ZIP	

7. I certify that the statement of this application and attachments furnished herein are correct and without any error.

JJ Clark. (Signature)

Title VICE PRESIDENT

Date 08 NOV 2017

EASA
European Union Aviation Safety Agency

Your documentation

European Union Aviation Safety Agency
Applicant Services Department
Postfach 10 12 53
50452 Cologne, Germany

Jeff Clarke
AERO DESIGN LTD.
9888A MALASPINA ROAD
POWELL RIVER BC V8A 0G3
CANADA

Cologne, 10 July 2019

Approval Number: 10060494
EASA Account Number: 300116
Application Type: EASA STC Approval

Please state the **approval number** and your **EASA account number** in all communication with the Agency

Dear Sir or Madam,

Please find enclosed the original(s) of your document(s) issued by the European Aviation Safety Agency.

Should you have further queries, please do not hesitate to contact us. Please assist us by always quoting your EASA account number in any correspondence with the Agency.

Right to Appeal
The applicant has the right to appeal in accordance with Article 108-109 of Regulation (EU) No 2018/1139. The appeal notification must be filed in writing at EASA within two months of the date of this notification. Pursuant to Article 15 of Commission Regulation (EU) 319/2014, a charge shall be paid upon lodging the appeal. The amount of the charge is specified in Part II of the Annex of Commission Regulation (EU) 319/2014.

The appeal notification form, as well as further information on the appeal procedure, is available on the Agency's website (https://www.easa.europa.eu/the-agency/other-easa-boards/easa-board-of-appeal).

Yours faithfully,

Applicant Services Department
European Union Aviation Safety Agency

This is a computer generated document valid without an EASA signature.

European Union Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

10060494 REV. 1

This Certificate/Approval is issued by EASA, acting in accordance with Regulation (EU) 2018/1139 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 129 of that Regulation and in accordance with Commission Regulation (EU) No. 748/2012 to

AERO DESIGN LTD.

9888A MALASPINA ROAD
POWELL RIVER BC V8A 0G3
CANADA

and certifies that the change in the type design for the product listed below with the limitations and conditions specified meets the applicable Type Certification Basis and, if applicable, environmental protection requirements when operated within the conditions and limitations specified below:

Type Certificate Number: EASA.R.008/ EASA.R.146
Type Certificate Holder: AIRBUS HELICOPTERS
Type: AS 350/EC 130
AS 355
Model: AS 350 B1, AS 350 B2
AS 350 B3, AS 350 BA, AS 350 D
AS 355 E, AS 355 F, AS 355 F1
AS 355 F2, AS 355 N, AS 355 NP
Original STC Number: TCCA SH08-16, ISSUE 5

Description of Design Change:
Installation of External Attachment Provisions as detailed below.
Configuration A- External Attachment Provisions Only
Installation of External Attachment Provisions to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL786-1, Revision 4, dated 17 July 2014, or later approved revision. External Attachment Provisions installed in accordance with DCL786-1 may remain installed if the basket installation is removed.
Configuration B- External Cargo Basket (Short Basket)
Installation of Configuration A- External Attachment Provisions is a prerequisite for installation of Configuration B- External Cargo Basket installation. Installation of Quick Release Cargo Basket to be completed

See Continuation Sheet(s)

For the European Aviation Safety Agency

Cologne, Germany, 08 July 2019

Fabrice LEGAY
Section Manager
Medium & Light Rotorcraft

in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL776-1, Revision 4, dated 17 July 2014, or later approved revision.
Configuration D- External Cargo Basket (Medium Basket)
Installation of Configuration A- External Attachment Provisions is a prerequisite for installation of Configuration D- External Cargo Basket installation. Installation of Quick Release Cargo Basket to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL764-1, Revision 4, dated 17 July 2014, or later approved revision.
Configuration E- External Cargo Basket (Long Basket)
Installation of Configuration A- External Attachment Provisions is a prerequisite for installation of Configuration E- External Cargo Basket installation. Installation of Quick Release Cargo Basket to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL784-1, Revision 4, dated 17 July 2014, or later approved revision.
Configuration F- External Cargo Basket (Long Basket-Alternate)
Installation of Configuration A- External Attachment Provisions is a prerequisite for installation of Configuration F- External Cargo Basket installation. Installation of Quick Release Cargo Basket to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL940-1, Revision 1, dated 17 July 2014, or later approved revision.
Cargo Basket Modifications
Modifications to Cargo Basket configurations are eligible in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL704, Revision 9, dated 17 July 2014, or later approved revision. Eligibility limitations are noted on the drawings.

Rev. 01 - Extension of eligibility to AS 355 models.

EASA Certification Basis:
The Certification Basis (CB) for the original product remains applicable to this certificate/ approval.
The requirements for environmental protection and the associated certified noise and/ or emissions levels of the original product are unchanged and remain applicable to this certificate/ approval.

Associated Technical Documentation:
Data Pertinent to All Configurations;
Aero Design Ltd. Flight Manual Supplement FMS764.91, Revision 4, dated 16 July 2014;
Aero Design Ltd. Instructions for Continued Airworthiness ICA764.90, Revision 6, dated 15 July 2014

or later revisions of the above listed documents approved by EASA in accordance with the Technical Implementation Procedures of EU/ Canada Bilateral Agreement.

Limitations/Conditions:
Approved type of operation - VFR only.
For AS 355, CAT A operations are forbidden.

See Continuation Sheet(s)

Prior to installation of this design change it must be determined that the interrelationship between this design change and any other previously installed design change and/ or repair will introduce no adverse effect upon the airworthiness of the product.

- End -

Transport Canada / Transports Canada

DESIGN CHANGE APPROVAL APPLICATION

DEMANDE D'APPROBATION D'UNE MODIFICATION DE LA CONCEPTION

Legal name and address of applicant Nom et adresse légal du demandeur	Legal name and address of prospective holder Nom et adresse légal du titulaire éventuel	Name and address for billing purposes (if different than applicant) Nom et adresse aux fins de facturation (si différent du demandeur)
Aero Design Ltd. 9888A Malaspina Road Powell River, BC, Canada V8A 0G3	Aero Design Ltd. 9888A Malaspina Road Powell River, BC, Canada V8A 0G3	

Identification of aeronautical product / Identification du produit aéronautique

Make / Marque	Model / Modèle	Registration / Immatriculation	Serial No. / N° du série	Part No. / N° de la pièce
Airbus Helicopters	AS350/355	All eligible	All eligible	

Request for (check appropriate box) / Objet de la demande (Cochez les carrés selon le cas)

- ☐ STC / CTS
- ☐ STC (single serial number) / CTS (numéro de série simple)
- ☐ STC (multiple serial numbers) / CTS (numéros de série multiples)
- ☐ Type Certificate Revision / Revision de certificat de type
- ☑ Revision / Révision — No. / N° SH08-16 — Current Issue / Édition active 5
- ☐ Repair Design Approval (RDA) / Approbation de la conception de réparation (ACR)
- ☐ Repair Design Approval - Process Repair / ACR - Processus de réparation
- ☐ Part Design Approval (PDA) / Approbation de la conception de pièce (ACP)

Type Design Examination by Foreign Authority / Examen de la définition de type par autorité étrangère

- ☐ Application to a foreign authority is requested / La demande à une autorité étrangère est demandée.
- ☐ Type design examination of foreign change / Examen de la définition de type modification étrangère

Identify / Identifier

☐ Restricted Category / Catégorie restreinte — Type of Operation / Type d'opération

Title and brief description of modification, repair or replacement part, including effects of changes (use additional pages if necessary). Refer to CAR 521.155(b)(i) for details.
Titre et brève description de la modification, de la réparation ou de la pièce de rechange, y compris les effets des changements (utiliser des feuilles supplémentaires si nécessaire). Référez-vous à RAC 521.155(b)(i) pour des détails.

Installation of external attachment provisions and cargo basket.
Installation of attachment provisions on landing gear cross tubes. Installation of cargo basket (4 different sizes) on attachment provisions

Applicable Type Certificate (TC) / Certificat de type (CT) pertinent

TC No. / N° de CT	Issue No. / N° de l'édition	Identify State of Design / Identifier l'état de conception
H-83, H-87	23, 10	EASA

The applicant is responsible for the control of product manufacture / Le demandeur est responsable du contôle de la fabrication du produit

☑ Yes / Oui ☐ No / Non — If no, identify who is responsible / Si non, identifier qui est responsable

Documentation to be submitted Documentation à soumettre	Applicant Demandeur Submitted Soumis Yes Oui	No Non
Proposed certification basis Proposition de base de certification		✓
Certification plan in accordance with CAR 521.155(d) Plan de certification selon RAC 521.155(d)		✓

Applicant's remarks / Remarques du demandeur

Submission of data for 1-off modification without reissue of STC.

I hereby certify that the information contained herein is correct and complete. I agree to pay charges as prescribed in Part 1, Subpart 4 of the CARs (CAR 104-Charges).

Je certifie que les renseignements figurant ci-dessus sont exacts et complets. Je m'engage à payer les redevances prescrites à la sous-partie 4 de la partie I du RAC (sous-partie 104 du RAC - Redevances).

JEFF CLARKE Jeff Clarke.	VICE-PRESIDENT	2019-03-15
Name and Signature of Applicant / Nom et signature du demandeur	Title / Poste	Date (yyyy-mm-dd) / Date (aaaa-mm-jj)

Canada

DOCUMENT CONTROL LIST

(The Current Approval/Configuration Control List for Fabricated Parts, Assemblies and Other Documents and a Complete Listing of the Applicable Design Compliance Documents)

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
FABRICATION AND ASSEMBLY DOCUMENTS				
3	77610	2	10/07/2014	Cargo Basket Assembly
3	77611	2	11/07/2014	Basket Fabrication
3	77612	2	10/07/2014	Lid Fabrication
3	77627	1	10/07/2014	Placard
3	76421	1	11/07/2014	Hoop
3	76422	1	11/07/2014	Attachment Hoop
3	49215	1	13/03/2014	Spacer
3	49216	1	13/03/2014	Spacer
3	69823	2	13/03/2014	Basket Component - Lug
3	84240	0	21/05/2014	Lid Brace Installation
3	84255	2	13/03/2014	Handle Assembly
3	84261	2	13/03/2014	Handle Bar Assembly
3	84262	2	14/02/2014	Basket Handle Provisions Assembly
3	84263	0	14/02/2014	Lid Handle Provisions Assembly
3	84265	2	13/03/2014	Handle Lever
3	84267	1	13/03/2014	Handle Bracket

DCL REVISION CONTROL				
DCL REV.	DCL REV. DATE	REVISION BY	APPROVED BY	DESCRIPTION
0	06/03/2008	Jeff Clarke	TCCA - PNR	Original
1	01/02/2010	Jeff Clarke	TCCA - PNR	New handle configuration.
2	16/06/2010	Jeff Clarke	TCCA - PNR	Add new mounting beam configuration.
3	17/07/2014	Jeff Clarke	TCCA - PNR	Update to new address. Minor changes to fabrication drawings.
4	14/03/2019	Jeff Clarke	DAR 372	DCL format updated. One-off custom basket assembly added

APPROVAL:

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH

APPROVED
BY: M.PETSCHE (DAR #372)
DATE: MAR 15/19
CERT. NO.: SH08-16
ISSUE NO.: 5

Aero Design Ltd.
9888A Malaspina Road
Powell River, BC, Canada, V8A 0G3
Tel: 604.483.2376 www.aerodesign.ca

Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Short Basket Assembly

Document Control List Number	Revision	Sheet
DCL776-3	**4**	**1 of 2**

DOCUMENT CONTROL LIST

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
FABRICATION AND ASSEMBLY DOCUMENTS (CONTINUED)				
3	84272	1	13/03/2014	Bushing
3	36273	2	18/02/2014	Lid Bracket
3	36274	3	13/03/2014	Bushing
3	36275	4	04/10/2013	Bushing
3	36277	1	13/03/2014	Handle Bar
3	36278	3	13/03/2014	Spring
3	36280	3	13/03/2014	Lid Brace Assembly
ONE-OFF CUSTOM BASKET ASSEMBLY - S/N 77601-11				
4	77690	0	14/03/2019	Basket Modification
4	SI776.91	0	14/03/2019	Service Instructions
DESIGN COMPLIANCE DOCUMENTS				
4	AE776-1	3	17/09/2010	AE-100 Statement of Compliance
4	AE776-3	2	17/09/2010	AE-100 Statement of Compliance
4	CP764	0	06/02/2008	Compliance Program
4	CP776.90	0	14/03/2019	Certification Plan – One-off Custom Basket
4	CP940	1	05/07/2014	Certification Plan – Change of Holder
4	DOC940	1	01/08/2014	Declaration of Conformity
4	DOC776.90	1	14/03/2019	Declaration of Conformity – One-off Custom Basket
0	ER764.01	0	29/02/2008	Engineering Report
0	ER764.04	0	22/01/2010	Engineering Report
2	ER764.05	0	16/06/2010	Engineering Report
4	ER842.01	0	14/10/2011	Engineering Report
4	ER776.90	0	31/03/2016	Engineering Report– One-off Custom Basket
0	FTP764.03	0	26/02/2008	Flight Test Plan
0	None	N/A	18/03/2008	Flight Test Report – Transport Canada
4	SOC776.90	0	14/03/2019	Statement of Compliance – One-off Custom Basket
4	SU940	1	01/08/2014	Signed Undertaking of CAR 521 Division VIII
0	TR764.02	0	29/02/2008	Load Test Report

DOCUMENT CONTROL LIST

(Listing of Current Approved and Accepted Documents)

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
DOCUMENTS SITED ON THE APPROVAL DOCUMENT				
4	77601	4	08/07/2014	Quick Release Cargo Basket Installation
5	ICA764.90	7	06/09/2016	Instructions for Continued Airworthiness
4	FMS764.91	4	16/07/2014	Flight Manual Supplement
FABRICATION AND OTHER DOCUMENTS				
5	DCL776-3	4	14/03/2019	Document Control List for Quick Release Cargo Basket Assembly

DCL REVISION CONTROL				
DCL REV.	DCL REV. DATE	REVISION BY	APPROVED BY	DESCRIPTION
0	06/03/2008	Jeff Clarke	TCCA - PNR	Original.
1	05/03/2009	Jeff Clarke	DAR 290M	Added LH configuration.
2	01/02/2010	Jeff Clarke	TCCA – PNR	New handle configuration.
3	16/06/2010	Jeff Clarke	TCCA – PNR	New mounting beam configuration.
4	17/07/2014	Jeff Clarke	TCCA – PNR	Documents updated for new address.
5	14/03/2019	Jeff Clarke	DAR 372	DCL format updated. DCL776-3 updated.

APPROVAL:

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH

APPROVED

BY: _____
M.PETSCHE (DAR #372)

DATE: MAR 15/19
CERT. NO.: SH08-16
ISSUE NO.: 5

Aero Design Ltd.
9888A Malaspina Road
Powell River, BC, Canada, V8A 0G3
Tel: 604.483.2376 www.aerodesign.ca

Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Short Basket Installation (Configuration B)

Document Control List Number	Revision	Sheet
DCL776-1	**5**	**1 of 1**

Transport Canada / Transports Canada

MINISTERIAL DELEGATE STATEMENT OF COMPLIANCE WITH THE CERTIFICATION BASIS

1. Reference No.	2. Applicant Name
P-19-0045	AERO Design Ltd.

Part 1: Identification of Aeronautical Product

3. Applicable Design Approval Document No.	
SH08-16 issue 5	
4. Model No.	5. Make
AS350B/B1/B2/B3/BA/D, AS355E/F/F1/F2/N/NP	AIRBUS
6. Type (aircraft, engine, propeller, appliance, part)	
HELICOPTER	

Part 2: Substantiating Reports and Data

7. Number	8. Title
DCL776-1	Document Control List
DCL776-3	Document Control List

9. Purpose of Finding of Compliance

Structural modification for an Aero Design 77690 Cargo Basket. This is a custom modification to allow the basket to accommodate specialized equipment.

10. Applicable Elements of Certification Basis

As per CP776.90 rev 0, dated March 14, 2019 the following airworthiness requirements and applicable Amendment level:

27.305
27.307 Amdt 27-3
27.601
27.603 Amdt 27-16
27.605 Amdt 27-16
27.609
27.1557(a) Amdt 27-11

Part 3: Ministerial Delegate Finding of Compliance with the Certification Basis

Under the authority vested in me by the Minister under subsection 4.3(1) of the *Aeronautics Act*, I hereby find that the type design of the aeronautical product is in compliance with the certification basis as demonstrated by the applicant's substantiating reports and data to the best of my knowledge.

11. Signature of Delegate(s)	12. Name	13. Delegate No.	14. Date (yyyy-mm-dd)
	Michael Petsche	DAR #372	2019-03-15

Canada

Aero Design Ltd.

9888A Malaspina Road
Powell River, BC, V8A 0G3
Phone: 604-483-2376
Fax: 604-483-2372
www.aerodesign.ca

DECLARATION OF CONFORMITY WITH THE CERTIFICATION BASIS

In accordance with Canadian Aviation Regulations Subpart 521, I hereby declare that the design of the External Attachment Provisions and Cargo Basket Installation, as detailed in the data approved by Transport Canada on approval SH08-16, Issue 5, has been demonstrated to conform to the best of my knowledge to the basis of certification established by the Minister for that approval in file P-19-0045.

Aero Design Ltd.

per: _____
Signature

Jeff Clarke	Vice President	14 March 2019
Print Name	Title	Date

EASA APPLICATION

BASKETS

emailed 06/09/2016

Transport Canada / Transports Canada

DESIGN CHANGE APPROVAL APPLICATION

DEMANDE D'APPROBATION D'UNE MODIFICATION DE LA CONCEPTION

Legal name and address of applicant Nom et adresse légal du demandeur	Legal name and address of prospective holder Nom et adresse légal du titulaire éventuel	Name and address for billing purposes (if different than applicant) Nom et adresse aux fins de facturation (si différent du demandeur)
Aero Design Ltd. 9888A Malaspina Road Powell River, BC, Canada V8A 0G3	Aero Design Ltd. 9888A Malaspina Road Powell River, BC, Canada V8A 0G3	

Identification of aeronautical product / Identification du produit aéronautique

Make / Marque	Model / Modèle	Registration / Immatriculation	Serial No. / N° du série	Part No. / N° de la pièce
Airbus Helicopters	AS350	All eligible	All eligible	

Request for (check appropriate box) / Objet de la demande (Cochez les carrés selon le cas)

- ☐ STC / CTS
- ☐ STC (single serial number) / CTS (numéro de série simple)
- ☐ STC (multiple serial numbers) / CTS (numéros de série multiples)
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- ☑ Revision / Révision — No. / N° SH08-16 — Current Issue / Édition active 5
- ☐ Repair Design Approval (RDA) / Approbation de la conception de réparation (ACR)
- ☐ Repair Design Approval - Process Repair / ACR - Processus de réparation
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Type Design Examination by Foreign Authority / Examen de la définition de type par autorité étrangère

- ☑ Application to a foreign authority is requested / La demande à une autorité étrangère est demandée.
- ☐ Type design examination of foreign change / Examen de la définition de type modification étrangère

Identify / Identifier EASA - new STC

☐ Restricted Category / Catégorie restreinte — Type of Operation / Type d'opération

Title and brief description of modification, repair or replacement part, including effects of changes (use additional pages if necessary). Refer to CAR 521.155(b)(i) for details.
Titre et brève description de la modification, de la réparation ou de la pièce de rechange, y compris les effets des changements (utiliser des feuilles supplémentaires si nécessaire). Référez-vous à RAC 521.155(b)(i) pour des détails.

Installation of mounting provisions and cargo basket.
Installation of mounting provisions on landing gear cross tubes. Installation of cargo basket (4 different sizes) on mounting provisions.

Applicable Type Certificate (TC) / Certificat de type (CT) pertinent

TC No. / N° de CT	Issue No. / N° de l'édition	Identify State of Design / Identifier l'état de conception
H-83 (R.008)	23 (10)	EASA

The applicant is responsible for the control of product manufacture / Le demandeur est responsable du contôle de la fabrication du produit

☑ Yes / Oui ☐ No / Non — If no, identify who is responsible / Si non, identifier qui est responsable

Documentation to be submitted Documentation à soumettre	Applicant Demandeur Submitted Soumis Yes Oui	No Non
Proposed certification basis Proposition de base de certification		✓
Certification plan in accordance with CAR 521.155(d) Plan de certification selon RAC 521.155(d)		✓

Applicant's remarks / Remarques du demandeur

Application to EASA for a new STC

I hereby certify that the information contained herein is correct and complete. I agree to pay charges as prescribed in Part 1, Subpart 4 of the CARs (CAR 104-Charges).

Je certifie que les renseignements figurant ci-dessus sont exacts et complets. Je m'engage à payer les redevances prescrites à la sous-partie 4 de la partie I du RAC (sous-partie 104 du RAC - Redevances).

Name and Signature of Applicant / Nom et signature du demandeur	Title / Poste	Date (yyyy-mm-dd) / Date (aaaa-mm-jj)
JEFF CLARKE JC	VICE PRESIDENT	2016-09-06

Canada

Application for Approval of Supplemental Type Certificate

1. Applicant's Reference

1.1 Your Reference	**940**

2. Applicant Address and Contact Data

2.1 Applicant Data

2.1.1Name and Address (registered (business) name and address/legal seat of the company)	Applicant Number	**300116**	(A)DOA Reference	
	(Company) Name	Aero Design Ltd.		
	Street / Nr	9888A Malaspina Road		
	Post Code	V8A 0G3		
	City	Powell River, BC		
	Country	Canada		
2.1.2 Contact Person (responsible for this application)	Title	☒ Mr ☐ Ms		
	Name	Clarke		
	First name	Jeff		
	Job title	Engineering Technologist		
	Phone/Fax	Phone: 604-483-2376	Fax: 604-483-2372	
	Email	jeff@aerodesign.ca		

Important Note: First time applicants need to submit a copy of the company's **Business Registration** or similar legal document stating name and seat of the company together with the application.In case the applicant is not a company but a natural person, a copy of the person's **ID or passport** needs to be provided with the first application.

2.2 Billing Data(may be left blank, if same as 2.1 Applicant Data)

2.2.1 Billing Address (For the receipt of EASA Fees and Charges Invoices. EASA invoices are issued via post-mail to the address provided here.)	(Company) Name	Same as in section 2.1.1 (other name only in exceptional cases)
	Street / Nr	
	PO Box	
	Post Code	
	City	
	Country	
2.2.2 Contact Person (Responsible for ensuring the EASA terms of payment are honoured. An electronic invoice copy will be issued to the email address indicated here.)	Title	☐ Mr ☒ Ms
	Name	Rekve
	First name	Wanda
	Job title	Office Manager
	Phone/Fax	Phone: 604-483-2376 Fax: 604-483-2372
	Email	wanda@aerodesign.ca

Application for Approval of Supplemental Type Certificate

2.3 Shipping Data (may be left blank, if same as 2.1 Applicant Data)		
2.3.1 Certificate Delivery Address (for the shipping of original EASA documents)	(Company) Name	
	Street / Nr	
	PO Box	
	Post Code	
	City	
	Country	
2.3.2 Contact Person (Shipping)	Title	☐ Mr ☐ Ms
	Name	
	First name	
	Job title	
	Phone/Fax	
	Email	

Application for Approval of Supplemental Type Certificate

3. IdentificationofActivity

Supplemental Type Certificate ☒ Simple ☐ Standard ☐ Complex	For **revisions** to an STC,please complete an Application for **Major Change/Major Repair Design** or **Minor Change/Minor Repair Design**,as applicable. For a **transfer** to a new STC holder,please complete an Application for **Transfer of Certificate**.
Including change to approved parts of Flight Manual (FM)	☒ Yes ☐ No

4. Product Identification

4.1 Fees & Charges Information

Large Aeroplanes	General Aviation
☐ > 150 000 kg ☐ > 50 000 kg ≤ 150 000 kg ☐ > 22 000 kg ≤ 50 000 kg ☐ > 5 700 kg ≤ 22 000 kg (excluding commuter)	☐ > 5 700 kg ≤ 22 000 kg (including commuter) ☐ > 2 000 kg ≤ 5 700 kg ☐ ≤ 2 000 kg ☐ High Performance Aircraft (≤ 5 700 kg) ☐ Very Light Aeroplane ☐ Powered Sailplane ☐ Sailplane ☐ Light Sport Aeroplane
Rotorcraft, Balloons & Airships	**Propulsion**
☐ Large Rotorcraft ☒ Medium Rotorcraft ☐ Small Rotorcraft ☐ Very Light Rotorcraft ☐ Balloon ☐ Large Airship ☐ Medium Airship ☐ Small Airship	☐ Turbine Engine > 25 kN take-off thrust ☐ Turbine Engine ≤ 25 kN take-off thrust ☐ Turbine Engine > 2000 kW take-off power ☐ Turbine Engine ≤ 2000 kW take-off power ☐ Non-Turbine Engine ☐ CS-22.H, CS VLR App. B Engine ☐ Propeller for use on aircraft > 5 700 kg MTOW ☐ Propeller for use on aircraft ≤ 5 700 kg MTOW ☐ CS-22J Class Propeller ☐ APU (Parts & Appliances)

4.2 Applicability	Type Certificate Number	EASA.IM.R.008; FAA H9EU; TCCA H-83
	Type Certificate Holder	**Airbus Helicopters**
	Type Name	**AS350**
	Model(s)	**B, B1, B2, B3, BA, D**
4.3 Airworthiness Code	CS-27	

Application for Approval of Supplemental Type Certificate

4.4 European Light Aircraft	☐ Non-ELA	☐ ELA 1 ☐ ELA 2	please consult the completion instructions for definitions of ELA 1 and ELA 2 aircraft

5. Original Approval (if applicable)

5.1 Third Country Approval/Project N°	Approval/Project Number	SH08-16, Issue 5
	Issued by	Transport Canada
	Issued on	08 September 2014

6. Description

6.1 Title	Installation of External Attachment Provisions and Cargo Basket.
6.2 Description	Installation of attachment fittings on the landing gear cross tubes. Installation of mounting beams on the attachment fittings. Installation of cargo basket on mounting beams.
6.3 Affected Areas (including manuals)	See Certification Plan CP940, revision 1; Flight Manual Supplement FMS764.91, Instructions for Continued Airworthiness ICA764.90
6.4 Re-Investigations	None
6.5 Justification	Transport Canada has issued an STC

7. Part 21 demonstration of eligibility

I declare that this application is:

☐ Within the current approved scope of work of the applicant's DOA/ADOA		
☐ Undertaken by another person than the applicant for, or holder of, a certificate (Part 21.A.2)	Name	(Company) Name
	DOA/ADOA N°	DOA/ADOA N°
☐ Following an application for Design Organisation Approval (**FO.DOA.00080**)or Alternative Procedures to Design Organisation Approval(**FO.DOA.00081**).	Application Date	
	Project N°	if known
☐ Following an application for a change to the scope of work via EASA Form**FO.DOA.00081**or **FO.DOA.00082.**	Application Date	
	Project N°	if known
☒ **Without DOA/ADOA**		
☐ Use of Article 8.2 of Regulation 748/2012		
☐ Covered by a Certification Programme in accordance with 21.A20(c) for ELA 1 aircraft or engine/propeller		

Application for Approval of Supplemental Type Certificate

installed on an ELA 1 aircraft.
☒ Bilateral Agreement/Working Arrangement is in force

Application for Approval of Supplemental Type Certificate

8. Applicant's declaration and acceptance of the General Conditions and Terms of Payment

I declare that I have the legal capacity to submit this application to EASA and that all information provided in this application form is correct and complete.

I have understood that I am submitting an application for which fees or charges will be levied by EASA in accordance with Commission Regulation (EC) on the fees and charges levied by the European Aviation Safety Agency, as last amended and available from http://easa.europa.eu/> Legislation > Fees & Charges.

I acknowledge that I have read and understood the Agency's Terms of Payment (see http://easa.europa.eu/> Legislation > Fees & Charges>General Conditions and Terms of Payment) and agree to abide by them. I declare to be aware that fees or charges, as well as all relevant travel costs must be paid whether or not the application is successful and that they might not be refundable. Moreover, I declare that I am aware of the consequences of non-payment.

2016-09-06 POWELL RIVER, BC	JEFF CLARKE VICE PRESIDENT	
Date/Location	Name	Signature

Important Note: EASA cannot accept applications without signature. Please make sure that you sign the application.

This Application should be sent by fax, e-mail or regular mail to:

European Aviation Safety Agency
Applications and Outsourcing Services Department
Postfach 10 12 53
D-50452 Köln
Germany

Fax: +49 – (0)221 - 89990 ext. 4458
E-mail: STC@easa.europa.eu

Completion Instructions

Completion Instructions

Please double-click on the icon to access the completion instructions

EASA
European Aviation Safety Agency

Your documentation

Certificate Delivery Team
Applicant Services Department
Resources and Support Directorate

Jeff Clarke
AERO DESIGN LTD.
9888A MALASPINA ROAD
POWELL RIVER BC V8A 0G3
CANADA

Cologne, 04 January 2017

Approval Number: 10060494/495/496
EASA Account Number: 300116
Application Type: EASA STC Approval

Please state the **approval number** and your **EASA account number** in all communication with the Agency

Dear Sir or Madam,

Please find enclosed the original(s) of your document(s) issued by the European Aviation Safety Agency.

Should you have further queries, please do not hesitate to contact us. Please assist us by always quoting your EASA account number in any correspondence with the Agency.

Right to Appeal
You have the right to appeal against this decision of the Agency in accordance with Articles 44-51 of Regulation (EC) No 216/2008. The appeal notification must be filed in writing at EASA within two months from the date of notification of this decision; you are required to pay a fee when lodging the appeal. The appeal notification form and further instructions are available from the EASA website: http://www.easa.europa.eu.

Yours faithfully,

The Applications Management Team

This is a computer generated document valid without an EASA signature.

SUPPLEMENTAL TYPE CERTIFICATE

10060494

This Supplemental Type Certificate is issued by EASA, acting in accordance with Regulation (EC) No. 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation and in accordance with Commission Regulation (EU) No. 748/2012 to:

AERO DESIGN LTD.

9888A MALASPINA ROAD
POWELL RIVER BC V8A 0G3
CANADA

and certifies that the change in the type design for the product listed below with the limitations and conditions specified meets the applicable Type Certification Basis and environmental protection requirements when operated within the conditions and limitations specified below:

Original Type Certificate Number: EASA.R.008
Type Certificate Holder: AIRBUS HELICOPTERS
Type: AS 350/EC 130
Model: AS 350 B1, AS 350 B2
AS 350 B3, AS 350 BA
AS 350 D
Original STC Number: TCCA SH08-16, ISSUE 5

Description of Design Change:
Installation of External Attachment Provisions as detailed below.
Configuration A- External Attachment Provisions Only
Installation of External Attachment Provisions to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL786-1, Revision 4, dated 17 July 2014, or later approved revision.
External Attachment Provisions installed in accordance with DCL786-1 may remain installed if the basket

See Continuation Sheet(s)

For the European Aviation Safety Agency

Date of Issue: 15 December 2016

Pier Giorgio COLOMBO
Medium Rotorcraft Section Manager

installation is removed.
Configuration B- External Cargo Basket (Short Basket)
Installation of Configuration A- External Attachment Provisions is a prerequisite for installation of Configuration B- External Cargo Basket installation. Installation of Quick Release Cargo Basket to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL776-1, Revision 4, dated 17 July 2014, or later approved revision.
Configuration D- External Cargo Basket (Medium Basket)
Installation of Configuration A- External Attachment Provisions is a prerequisite for installation of Configuration D- External Cargo Basket installation. Installation of Quick Release Cargo Basket to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL764-1, Revision 4, dated 17 July 2014, or later approved revision.
Configuration E- External Cargo Basket (Long Basket)
Installation of Configuration A- External Attachment Provisions is a prerequisite for installation of Configuration E- External Cargo Basket installation. Installation of Quick Release Cargo Basket to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL784-1, Revision 4, dated 17 July 2014, or later approved revision.
Configuration F- External Cargo Basket (Long Basket-Alternate)
Installation of Configuration A- External Attachment Provisions is a prerequisite for installation of Configuration F- External Cargo Basket installation. Installation of Quick Release Cargo Basket to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL940-1, Revision 1, dated 17 July 2014, or later approved revision.
Cargo Basket Modifications
Modifications to Cargo Basket configurations are eligible in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL704, Revision 9, dated 17 July 2014, or later approved revision. Eligibility limitations are noted on the drawings.

EASA Certification Basis:
The Certification Basis (CB) for the original product remains applicable to this certificate/ approval.
The requirements for environmental protection and the associated certified noise and/ or emissions levels of the original product are unchanged and remain applicable to this certificate/ approval.

Associated Technical Documentation:
Data Pertinent to All Configurations
Aero Design Ltd. Flight Manual Supplement FMS764.91, Revision 4, dated 16 July 2014
Aero Design Ltd. Instructions for Continued Airworthiness ICA764.90, Revision 6, dated 15 July 2014.
or later revisions of the above listed documents approved by EASA in accordance with the Technical Implementation Procedures of EU/ Canada Bilateral Agreement.

Limitations/Conditions:
Prior to installation of this design change it must be determined that the interrelationship between this design change and any other previously installed design change and/ or repair will introduce no adverse effect upon the airworthiness of the product.

- End -

EASA
European Aviation Safety Agency

Your documentation

Certificate Delivery Team
Applicant Services Department
Resources and Support Directorate

Jeff Clarke
AERO DESIGN LTD.
9888A MALASPINA ROAD
POWELL RIVER BC V8A 0G3
CANADA

Cologne, 04 January 2017

Approval Number: 10060494/495/496
EASA Account Number: 300116
Application Type: EASA STC Approval

Please state the **approval number** and your **EASA account number** in all communication with the Agency

Dear Sir or Madam,

Please find enclosed the original(s) of your document(s) issued by the European Aviation Safety Agency.

Should you have further queries, please do not hesitate to contact us. Please assist us by always quoting your EASA account number in any correspondence with the Agency.

Right to Appeal
You have the right to appeal against this decision of the Agency in accordance with Articles 44-51 of Regulation (EC) No 216/2008. The appeal notification must be filed in writing at EASA within two months from the date of notification of this decision; you are required to pay a fee when lodging the appeal. The appeal notification form and further instructions are available from the EASA website: http://www.easa.europa.eu.

Yours faithfully,

The Applications Management Team

This is a computer generated document valid without an EASA signature.

SUPPLEMENTAL TYPE CERTIFICATE

10060494

This Supplemental Type Certificate is issued by EASA, acting in accordance with Regulation (EC) No. 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation and in accordance with Commission Regulation (EU) No. 748/2012 to:

AERO DESIGN LTD.

9888A MALASPINA ROAD
POWELL RIVER BC V8A 0G3
CANADA

and certifies that the change in the type design for the product listed below with the limitations and conditions specified meets the applicable Type Certification Basis and environmental protection requirements when operated within the conditions and limitations specified below:

Original Type Certificate Number: EASA.R.008
Type Certificate Holder: AIRBUS HELICOPTERS
Type: AS 350/EC 130
Model: AS 350 B1, AS 350 B2
AS 350 B3, AS 350 BA
AS 350 D
Original STC Number: TCCA SH08-16, ISSUE 5

Description of Design Change:
Installation of External Attachment Provisions as detailed below.
Configuration A- External Attachment Provisions Only
Installation of External Attachment Provisions to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL786-1, Revision 4, dated 17 July 2014, or later approved revision.
External Attachment Provisions installed in accordance with DCL786-1 may remain installed if the basket

See Continuation Sheet(s)

For the European Aviation Safety Agency

Date of Issue: 15 December 2016

Pier Giorgio COLOMBO
Medium Rotorcraft Section Manager

installation is removed.
Configuration B- External Cargo Basket (Short Basket)
Installation of Configuration A- External Attachment Provisions is a prerequisite for installation of Configuration B- External Cargo Basket installation. Installation of Quick Release Cargo Basket to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL776-1, Revision 4, dated 17 July 2014, or later approved revision.
Configuration D- External Cargo Basket (Medium Basket)
Installation of Configuration A- External Attachment Provisions is a prerequisite for installation of Configuration D- External Cargo Basket installation. Installation of Quick Release Cargo Basket to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL764-1, Revision 4, dated 17 July 2014, or later approved revision.
Configuration E- External Cargo Basket (Long Basket)
Installation of Configuration A- External Attachment Provisions is a prerequisite for installation of Configuration E- External Cargo Basket installation. Installation of Quick Release Cargo Basket to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL784-1, Revision 4, dated 17 July 2014, or later approved revision.
Configuration F- External Cargo Basket (Long Basket-Alternate)
Installation of Configuration A- External Attachment Provisions is a prerequisite for installation of Configuration F- External Cargo Basket installation. Installation of Quick Release Cargo Basket to be completed in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL940-1, Revision 1, dated 17 July 2014, or later approved revision.
Cargo Basket Modifications
Modifications to Cargo Basket configurations are eligible in accordance with TCCA approved, Aero Design Ltd. Document Control List, DCL704, Revision 9, dated 17 July 2014, or later approved revision. Eligibility limitations are noted on the drawings.

EASA Certification Basis:
The Certification Basis (CB) for the original product remains applicable to this certificate/ approval.
The requirements for environmental protection and the associated certified noise and/ or emissions levels of the original product are unchanged and remain applicable to this certificate/ approval.

Associated Technical Documentation:
Data Pertinent to All Configurations
Aero Design Ltd. Flight Manual Supplement FMS764.91, Revision 4, dated 16 July 2014
Aero Design Ltd. Instructions for Continued Airworthiness ICA764.90, Revision 6, dated 15 July 2014.
or later revisions of the above listed documents approved by EASA in accordance with the Technical Implementation Procedures of EU/ Canada Bilateral Agreement.

Limitations/Conditions:
Prior to installation of this design change it must be determined that the interrelationship between this design change and any other previously installed design change and/ or repair will introduce no adverse effect upon the airworthiness of the product.

- End -

AS350 BASKETS - BRAZIL

CST 2017507-01

AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL
Rua Laurent Martins, 209, - Bairro Jardim Esplanada, São José dos Campos/SP, ZIP 12242-431 - Brazil
Phone: 55 12 3203-6600 - https://www.anac.gov.br

Ofício nº 567(SEI)/2017/GCPR/GGCP/SAR-ANAC

São José dos Campos, 05 July 2017.

Mr. Jeef Clarke
Vice Presidente
Aero Design, Ltd.
9888A Malaspina Road
Powell River, BC, V8A 0G3
Canada

Subject: **Brazilian validation of TCCA STC # SH08-16.**

Ref.: Process No. 00066.510360/2017-15 - ANAC Project Number H.02-4858-0.
If you reply to this Office, expressly indicate Process No.00066.510360/2017-15 SEI No. 0834449

Enclosure: CST # 2017S07-01.

Dear Sir,

1. Please find enclosed the Brazilian Supplemental Type Certificate (CST) # 2017S07-01 related to the Brazilian validation of TCCA STC # SH08-16 (Installation of external attachment provisions and cargo basket), applicable to the aircraft models as listed in the Approved Model List (AML).

Yours sincerely,

Cesar Rodrigues Hess
Manager, Certification Programs Branch

Cópies:
PST = 1
Aero (e-mail: jeff@aerodesign.ca)
TCCA (e-mail: michael.chan@tc.gc.ca)

Documento assinado eletronicamente por **CESAR RODRIGUES HESS**, **Gerente de Programas de Certificação**, em 05/07/2017, às 15:10, conforme horário oficial de Brasília, com fundamento no art. 6º, § 1º, do Decreto nº 8.539, de 8 de outubro de 2015.

A autenticidade deste documento pode ser conferida no site http://sistemas.anac.gov.br/sei/controlador_externo.php?acao=documento_conferir&id_orgao_acesso_externo=0, informando o código verificador **0834449** e o código CRC **DC01BB58**.

CERTIFICADO SUPLEMENTAR DE TIPO

(Supplemental Type Certificate)

NÚMERO: 2017S07-01

(Number)

Este Certificado, emitido com base na Lei n° 7565 "Código Brasileiro de Aeronáutica", de 19 de dezembro de 1986,
This Certificate, issued in the basis of the Law No 7565 "Código Brasileiro de Aeronáutica", dated 19 December 1986,

é conferido ao (à):
is granted to:

Aero Design Ltd.
9888A Malaspina Road
Powell Rives, British Columbia
Canada V8A 0G3

por ter a modificação ao projeto de tipo do produto abaixo citado, observadas as limitações e condições especificadas,
for having the change to the type design of the product mentioned below, with the limitations and conditions there for as specified hereon,

satisfeito aos requisitos de aeronavegabilidade aplicáveis.
met the applicable airworthiness requirements.

Produto Original - Número do Certificado de Tipo:
Original Product - Type Certificate No:

* See attached ANAC Approved Model List (AML), Rev. I.R., dated 03 July 2017, or later approved revision.

Fabricante: *
Manufacturer:

Modelo(s): *
Model (s):

DESCRIÇÃO DA MODIFICAÇÃO AO PROJETO DE TIPO:

Description of Type Design Change:

Installation of External Attachment Provisions and Cargo Basket in accordance with the applicable Aero Design Ltd. Document Control List indicated in the Limitations and Conditions section.

This CST validates in Brazil the STC No. SH08-16, issued by TCCA (Canada).

LIMITAÇÕES E CONDIÇÕES:

Limitations and Conditions:

See continuation sheet for applicable data.

DATAS: *Dates of:*

Do requerimento: 23 Mar. 2017 *Aplication:*

Da emissão: 03 July 2017 *Issuance:*

Da reemissão:
Reissuance:

Da emenda:
Amendment:

MÁRIO IGAWA
Gerente-Geral, Certificação de Produto Aeronáutico
(General Manager, Aeronautical Product Certification)

ROBERTO JOSÉ SILVEIRA HONORATO
Superintendente de Aeronavegabilidade
(Airworthiness Superintendent)

Nota:
(Note:)

a) Este Certificado e os dados técnicos com base nos quais ele foi emitido são válidos até que sejam cancelados,
(*This Certificate and the supporting technical data used for approval shall remain in effect until surrended,*
suspensos, revogados ou um prazo limite seja estabelecido pela Agência Nacional de Aviação Civil.
suspended, revoked or a termination date is otherwise established by the Agência Nacional de Aviação Civil.)

b) No caso de transferência de propriedade deste Certificado, o transferente deve preencher o quadro "Endosso
(*In case of transfer of the property of this Certificate, the grantor should fill the blanks of*
de Transferência", e o adquirente deve enviar este Certificado à Gerência Geral de Certificação de
"Transfer Endorsement", and the transferee must remit this Certificate to the Gerência Geral de Certificação de
Produto Aeronáutico para que seja reemitido em seu nome.
Produto Aeronáutico to permit reissuance of the Certificate in his name.)

ENDOSSO DE TRANSFERÊNCIA
(*Transfer Endorsement*)

Transfiro a propriedade deste Certificado Suplementar de Tipo para:
(*I transfer the property of this Supplemental Type Certificate to:*)

ADQUIRENTE
(*Transferee*)

Nome: .....
(*Name:*)

Rua: .....
(*Street:*)

CEP: ..... **Cidade:** ..... **Estado:**..... **País:** .....
(*Zip:*) (*City:*) (*State:*) (*Country:*)

TRANSFERENTE
(*Grantor*)

Nome: .....
(*Name:*)

Rua: .....
(*Street:*)

CEP: ..... **Cidade:** ..... **Estado:**..... **País:** .....
(*Zip:*) (*City:*) (*State:*) (*Country:*)

Data de Transferência: .....
(*Date of Transfer:*)

Assinatura do Transferente: .....
(*Signature of the Grantor:*)

Nome: .....
(*Name:*)

Cargo: .....
(*Function:*)

ANAC
AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL

Folha de Continuação ao
(*Continuation Sheet to*)

CERTIFICADO SUPLEMENTAR DE TIPO
(*Supplemental Type Certificate*)

NÚMERO: 2017S07-01
(Number)

LIMITAÇÕES E CONDIÇÕES:
Limitations and Conditions:

Configuration A – External Attachment Provisions Only

Installation of External Attachment Provisions in accordance with Aero Design Ltd. Document Control List, Document No. DCL786-1, Rev. 5, dated 06 Sep. 2016, or later approved revision.

External Attachment Provisions installed in accordance with DCL786-1 may remain installed if the basket installation is removed.

Configuration B – External Cargo Basket (Short Basket)

Installation of Configuration A, External Attachment Provisions, is a prerequisite for the installation of Configuration B, External Cargo Basket Installation. Installation of a Quick Release Cargo Basket in accordance with Aero Design Ltd. Document Control List, Document No. DCL776-1, Rev. 4, dated 17 July 2014, or later approved revision.

Configuration D – External Cargo Basket (Medium Basket)

Installation of Configuration A, External Attachment Provisions, is a prerequisite for the installation of Configuration D, External Cargo Basket Installation. Installation of a Quick Release Cargo Basket in accordance with Aero Design Ltd. Document Control List, Document No. DCL764-1, Rev. 4, dated 17 July 2014, or later approved revision.

Configuration E – External Cargo Basket (Long Basket)

Installation of Configuration A, External Attachment Provisions, is a prerequisite for the installation of Configuration E, External Cargo Basket Installation. Installation of a Quick Release Cargo Basket in accordance with Aero Design Ltd. Document Control List, Document No. DCL784-1, Rev. 4, dated 17 July 2014, or later approved revision.

Configuration F – External Cargo Basket (Long Basket - Alternate)

Installation of Configuration A, External Attachment Provisions, is a prerequisite for the installation of Configuration F, External Cargo Basket Installation. Installation of a Quick Release Cargo Basket in accordance with Aero Design Ltd. Document Control List, Document No. DCL940-1, Rev. 2, dated 04 Apr. 2016, or later approved revision.

I. The approval of this type design change should not be extended to other rotorcraft of this model on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in Type Design, will introduce no adverse effect upon the airworthiness of that rotorcraft.

II. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

III. Modifications to the Cargo Basket configurations are eligible in accordance with Aero Design Ltd. Document Control List, Document No. DCL704, Rev. 9, dated 17 July 2014, or later approved revision. Eligibility limitations are noted on the drawings.

IV. Operation of all Configurations must be performed in accordance with the TCCA approved Rotorcraft Flight Manual Supplement (RFMS), Aero Design Ltd. Document No. FMS764.91, Rev. 4, dated 16 July 2014, or later approved revision.

V. The mantainance of the rotorcraft for all Configurations shall be performed in accordance with the Instructions for Continued Airworthiness (ICA), Aero Design Ltd. Document No. ICA 764.90, Rev. 7, dated 06 Sep. 2016, or later accepted revision.

VI. A copy of this Certificate, the Supplement referred on item IV above, if applicable, and the ANAC Approved Model List (AML) for CST No. 2017S07-01 shall be maintained as part of the permanent records for the modified rotorcraf.

----------END----------

Documento assinado eletronicamente por **MARIO IGAWA, Gerente-Geral de Certificação de Produtos Aeronáuticos**, em 05/07/2017, às 15:58, conforme horário oficial de Brasília, com fundamento no art. 6º, § 1º, do Decreto nº 8.539, de 8 de outubro de 2015.

Documento assinado eletronicamente por **ROBERTO JOSÉ SILVEIRA HONORATO, Superintendente de Aeronavegabilidade**, em 07/07/2017, às 18:15, conforme horário oficial de Brasília, com fundamento no art. 6º, § 1º, do Decreto nº 8.539, de 8 de outubro de 2015.

A autenticidade deste documento pode ser conferida no site http://sistemas.anac.gov.br/sei/controlador_externo.php?acao=documento_conferir&id_orgao_acesso_externo=0, informando o código verificador **0829904** e o código CRC **23DD36E6**.

ANAC LISTA DE MODELOS APROVADOS (LMA) PARA CST

(ANAC APPROVED MODEL LIST (AML) FOR (CST))

NÚMERO: 2017S07-01

(Number)

ITEM	ROTORAFT MAKE	ROTORCRAFT MODEL(S)	TYPE CERTIFICATE NUMBER
1	Airbus Helicopters	AS 350 B	R.008 (EASA)
2	Airbus Helicopters	AS 350 B1, AS 350 B2, AS 350 B3, AS 350 BA	8812 (ANAC)
3	Airbus Helicopters	AS 355 F, AS 355 F1, AS 355 F2, AS 355 N, AS 355 NP	8809 (ANAC)

Aprovação ANAC:
(ANAC Approval:)

MÁRIO IGAWA
Gerente-Geral, Certificação de Produto Aeronáutico
(General Manager, Aeronautical Product Certification)

Data da aprovação ANAC: 03 July 2017
(ANAC Approval Date:)

Revisão: I.R.
(Rev.:)

Aero Design Ltd.
604-483-AERO (2376)

9888A Malaspina Road
Powell River, BC, Canada, V8A 0G3

23 March 2017

Transport Canada
Aircraft Certification Division
Suite 620
800 Burrard Street
Vancouver, BC
V6Z 2J8

Attn: Michael Chan

Your File :
Our File : 940

Re: Airbus Helicopters AS350/AS355 Cargo Baskets – Brazilian STC Application

Michael,

Please find attached the following documents in support of application for a new Brazilian STC:

✓ Modification Approval Request Application Form		
✓ ANAC STC Application Form F-300-11E		
✓ Transport Canada STC	SH08-16	Issue 5
✓ FAA STC	SR02680NY	Amdt. 06/08/12
✓ EASA STC	10060494	Rev. 0
Certification Plan – STC update	CP940	Rev. 1
786 → Certification Plan – Minor Changes	CP-SH08-16	Rev. 1
✓ Instructions for Continued Airworthiness	ICA764.90	Rev. 7
✓ MSI 53 Review for ICA764.90 Rev. 6		
✓ Flight Manual Supplement	FMS764.91	Rev. 4
SU, SM, Doc		
Document Control List (Provisions Installation)	DCL786-1	Rev. 5
Attachment Provisions Installation	78602	Rev. 1
Attachment Provisions Installation (Cargo Pod Compatible)	78603	Rev. 2
Service Bulletin – Cargo Pod Clamps	SB786.01	Rev. 0
Document Control List (Provision Fabrication)	DCL786-3	Rev. 5
Clamp Fabrication	78620	Rev. 5
Clamp Fabrication (Cargo Pod Compatible)	78622	Rev. 0
Aft Beam Fabrication	78633	Rev. 1
Forward Beam Fabrication	78635	Rev. 0
Engineering Report	ER786.01	Rev. 0
Document Control List (Short Basket Installation)	DCL776-1	Rev. 4
Cargo Basket Installation (Short Basket)	77601	Rev. 4

Document Control List (Short Basket Assembly)	DCL776-3	Rev. 3
Cargo Basket Assembly	77610	Rev. 2
Basket Fabrication	77611	Rev. 2
Lid Fabrication	77612	Rev. 2
Placard	77627	Rev. 1
Document Control List (Medium Basket Installation)	DCL764-1	Rev. 4
Cargo Basket Installation (Medium Basket)	76401	Rev. 4
Document Control List (Medium Basket Assembly)	DCL764-3	Rev. 4
Cargo Basket Assembly	76410	Rev. 3
Basket Fabrication	76411	Rev. 3
Lid Fabrication	69812	Rev. 4
Hoop	76421	Rev. 1
Attachment Hoop	76422	Rev. 1
Attachment Hoop	76423	Rev. 3
Placard	76427	Rev. 2
Document Control List (Long Basket Installation)	DCL784-1	Rev. 4
Cargo Basket Installation (Long Basket)	78401	Rev. 4
Document Control List (Long Basket Assembly)	DCL784-3	Rev. 4
Cargo Basket Assembly	78410	Rev. 2
Basket Fabrication	78411	Rev. 3
Lid Fabrication	78412	Rev. 2
Placard	78427	Rev. 2
Document Control List (XL Basket Installation)	DCL940-1	Rev. 2
Cargo Basket Installation (XL Basket)	94001	Rev. 1
Document Control List (XL Basket Assembly)	DCL940-3	Rev. 2
Cargo Basket Assembly	94010	Rev. 1
Basket Fabrication	94011	Rev. 1
Lid Fabrication	94012	Rev. 1
Attachment Hoop	94023	Rev. 1
Placard	94027	Rev. 1
Hoop	94030	Rev. 1
Modification to S/N 94001-57		
Certification Plan	CP940.90	Rev. 0
Engineering Report	ER940.90	Rev. 0
Test Report	TR940.91	Rev. 0
Service Instructions	SI940.91	Rev. 0
Basket Modification	94091	Rev. 0
Lid Modification	94092	Rev. 0
Document Control List (Modifications)	DCL704	Rev. 9
Lid Door Modification	70402	Rev. 2
Auxiliary Latch Modification	70403	Rev. 5
Lid Step Modification	70405	Rev. 4
Front End Cutout – AS350 / AS355	70406	Rev. 3

Aero Design Ltd.
604-483-AERO (2376)

9888A Malaspina Road
Powell River, BC, Canada, V8A 0G3

Hangar Wheel Installation	70408	Rev. 1
Hangar Wheel Assembly	70428	Rev. 1
Hangar Wheel Parts	70438	Rev. 1

Common Component Drawings (all models)

Spacer	49215	Rev. 1
Spacer	49216	Rev. 1
Lug	69823	Rev. 2
Lid Brace Installation	84240	Rev. 0
Handle Installation	84255	Rev. 2
Handle Bar Assembly	84261	Rev. 2
Basket Handle Provisions Assembly	84262	Rev. 2
Lid Handle Provisions Assembly	84263	Rev. 0
Handle Lever	84265	Rev. 2
Handle Bracket	84267	Rev. 1
Bushing	84272	Rev. 1
Lid Bracket	36273	Rev. 2
Bushing	36274	Rev. 3
Bushing	36275	Rev. 4
Handle Bar	36277	Rev. 1
Spring	36278	Rev. 3
Lid Brace	36280	Rev. 3

Common Reports (764 / 776 / 784)

Engineering Report	ER764.01	Rev. 0
Test Report	TR764.02	Rev. 0
Flight Test Plan and Report	FTP764.03	Rev. 0
Engineering Report	ER764.04	Rev. 0
Engineering Report	ER764.05	Rev. 0
Flight Test Report (TCCA)	(none)	(none)

A CD with the above data is included for submission to ANAC.

Regards,

Jeff Clarke, P.Tech.(Eng.)
Vice President

Encl.

Transport Canada / Transports Canada

DESIGN CHANGE APPROVAL APPLICATION

DEMANDE D'APPROBATION D'UNE MODIFICATION DE LA CONCEPTION

Legal name and address of applicant Nom et adresse légal du demandeur	Legal name and address of prospective holder Nom et adresse légal du titulaire éventuel	Name and address for billing purposes (if different than applicant) Nom et adresse aux fins de facturation (si différent du demandeur)
Aero Design Ltd. 9888A Malaspina Road Powell River, BC, Canada V8A 0G3	Aero Design Ltd. 9888A Malaspina Road Powell River, BC, Canada V8A 0G3	

Identification of aeronautical product / Identification du produit aéronautique

Make / Marque	Model / Modèle	Registration / Immatriculation	Serial No. / N° du série	Part No. / N° de la pièce
Airbus Helicopters	AS350/355 (all)	All eligible	All eligible	

Request for (check appropriate box) / Objet de la demande (Cochez les carrés selon le cas)

- ☐ STC / CTS
- ☐ STC (single serial number) / CTS (numéro de série simple)
- ☐ STC (multiple serial numbers) / CTS (numéros de série multiples)
- ☐ Type Certificate Revision / Revision de certificat de type
- ☑ Revision / Révision — No. / N° SH08-16 — Current Issue / Édition active 5
- ☐ Repair Design Approval (RDA) / Approbation de la conception de réparation (ACR)
- ☐ Repair Design Approval - Process Repair / ACR - Processus de réparation
- ☐ Part Design Approval (PDA) / Approbation de la conception de pièce (ACP)

Type Design Examination by Foreign Authority / Examen de la définition de type par autorité étrangère

- ☑ Application to a foreign authority is requested / La demande à une autorité étrangère est demandée.
- ☐ Type design examination of foreign change / Examen de la définition de type modification étrangère

Identify / Identifier: Brazil - new STC

- ☐ Restricted Category / Catégorie restreinte — Type of Operation / Type d'opération

Title and brief description of modification, repair or replacement part, including effects of changes (use additional pages if necessary). Refer to CAR 521.155(b)(i) for details.
Titre et brève description de la modification, de la réparation ou de la pièce de rechange, y compris les effets des changements (utiliser des feuilles supplémentaires si nécessaire). Référez-vous à RAC 521.155(b)(i) pour des détails.

Installation of mounting provisions and cargo basket.
Installation of mounting provisions on landing gear cross tubes. Installation of cargo basket (4 different sizes) on mounting provisions.

Applicable Type Certificate (TC) / Certificat de type (CT) pertinent

TC No. / N° de CT	Issue No. / N° de l'édition	Identify State of Design / Identifier l'état de conception
H-83, H-87	23, 9	EASA

The applicant is responsible for the control of product manufacture / Le demandeur est responsable du contôle de la fabrication du produit

☑ Yes / Oui ☐ No / Non — If no, identify who is responsible / Si non, identifier qui est responsable

Documentation to be submitted Documentation à soumettre	Applicant Demandeur Submitted Soumis Yes Oui	No Non
Proposed certification basis Proposition de base de certification		✓
Certification plan in accordance with CAR 521.155(d) Plan de certification selon RAC 521.155(d)		✓

Applicant's remarks / Remarques du demandeur

Application to ANAC in Brazil for a new STC

I hereby certify that the information contained herein is correct and complete. I agree to pay charges as prescribed in Part 1, Subpart 4 of the CARs (CAR 104-Charges).

Je certifie que les renseignements figurant ci-dessus sont exacts et complets. Je m'engage à payer les redevances prescrites à la sous-partie 4 de la partie I du RAC (sous-partie 104 du RAC - Redevances).

Name and Signature of Applicant / Nom et signature du demandeur	Title / Poste	Date (yyyy-mm-dd) / Date (aaaa-mm-jj)
JEFF CLARKE Jeff Clark.	VICE-PRESIDENT	2017-03-23

Canada

APPLICATION FOR CERTIFICATION WORKS	AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL Gerência-Geral de Certificação de Produtos Aeronáuticos	
1. NAME AND ADDRESS OF APPLICANT:	2. APPLICATION FOR:	3. PRODUCT INVOLVED:
Aero Design Ltd. **9888A Malaspina Road** **Powell River, BC, V8A 0G3** **Canada** OBS: Please include contact information, such as phone number, fax, e-mail, etc.	☐ Type Certification	☐ Aircraft
	☐ Production Certification	☐ Engine
	☒ Suppl. Type Certification	☐ Propeller
	☐ Aeronautical Products Approval	☒ Parts / Components
		☐ Others

4. TYPE CERTIFICATION:

A. Model Designations (s)

OBS: All models listed are to be completely described in the required technical data, including drawings, representing the design, material, specifications, construction, performance of the aircraft, aircraft engine, propeller & parts.

5. PRODUCTION CERTIFICATION:

A. Factory address (if different from 1 above)

B. Type of request:

☐ original request ☐ amendment to the original certificate No

C. Applicant is:

☐ holder ☐ licensee

D. Remarks:

I. If necessary, list the additional details on products or service for which the certification is required.

II. List the documents attached to this application.

6. SUPPLEMENTAL TYPE CERTIFICATION:

A. Make and model designation of product to be modified:

Airbus Helicopters AS350 B, BA, B1, B2, B3

Airbus Helicopters AS355 D, E, F, F1, F2, N, NP

B. Description of modification:

Installation of external attachment provisions and cargo basket

C.: Will data be available for sale or release to other persons?

☐ yes ☒ no

D.: Will parts be manufactured for sale?

☒ yes ☐ no

7. ATTESTATION OF APPROVED AERONAUTICAL PRODUCT (except aircraft, aircraft engine and propeller)

A. Parts or components designation

B. Specification adopted

Obs.: For a betther identification of the product, techinical data (drawings, test reports, material specification) must be included.

C. Factory address

8. Applicant statement, signature and date:

I, **Jeff Clarke** certify that above informations are true.

Signature

Vice President
[Title]

23 / 03 / 17
Date

jeff@aerodesign.ca, 604-483-2376
email and phone

DOCUMENT CONTROL LIST

DOCUMENT NO.	DOCUMENT CONTENT	REVISION
	INSTALLATION DOCUMENTS	
70408	Installation, Hangar Wheel	1
	FABRICATION DOCUMENTS	
70401 N/A	Open Forward End Modification (Bell 206L/407 Fixed and McDonnell Douglas MD600N Quick Release Only)	1
70402 ✓	Lid Door Modification	2
70403 ✓	Auxiliary Latch Modification	5
70404 N/A	Open Forward End Modification (Bell 206L/407 Quick Release Only)	2
70405 ✓	Lid Step Modification	4
70406 ✓ ✓	Open Forward End Modification (Eurocopter AS350/AS355 and Bell 206B Quick Release Only)	3
70407 N/A	Open Forward End Modification (Eurocopter EC135 Quick Release Only)	0
70411 N/A	Open Forward End Modification (Bell 206L/407 Large Quick Release Only)	0
70428	Assembly, Hangar Wheel	1
70438	Parts, Hangar Wheel	1
	ENGINEERING DOCUMENTS	
ER704.02 ✓	Engineering Report	0

APPROVAL:

Transport Canada / Transports Canada
AIRCRAFT CERTIFICATION DIVISION
APPROVED
By
Appr'l No. SH08-16
Appr'l Date 2008-04-11
Issue No. 5
Issue Date 2014-09-08
YY - MM - DD

ORIGINAL DATE:
10 May 2006
REVISION DATE:
17 July 2014

Aero Design Ltd.
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Tel: 604.483.2376 www.aerodesign.ca

SHEET 1 OF 1

Cargo Basket Modifications

DCL704

Rev. **9**

DOCUMENT CONTROL LIST

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
FABRICATION AND ASSEMBLY DOCUMENTS (CONTINUED)				
1	36273	2	18/02/2014	Lid Bracket
1	36274	3	13/03/2014	Bushing
1	36275	4	04/10/2013	Bushing
1	36277	1	13/03/2014	Handle Bar
1	36278	3	13/03/2014	Spring
1	36280	3	13/03/2014	Lid Brace Assembly
ONE-OFF CUSTOM BASKET ASSEMBLY - S/N 94001-57				
2	94091	0	04/02/2016	Basket Modification
2	94092	0	04/02/2016	Lid Modification
2	SI940.91	0	04/04/2016	Service Instructions
DESIGN COMPLIANCE DOCUMENTS				
1	CP940	1	05/07/2014	Certification Plan
2	CP940.90	0	04/04/2016	Certification Plan – One-off Custom Basket
1	DOC940	1	01/08/2014	Declaration of Conformity
2	DOC940.90	1	04/04/2016	Declaration of Conformity – One-off Custom Basket
0	ER940.01	0	20/11/2011	Engineering Report
0	ER842.01	0	14/10/2011	Engineering Report
0	FTP940.03	0	20/10/2011	Flight Test Plan
0	FTR940.03	1	3/11/2011	Flight Test Report
2	ER940.90	0	31/03/2016	Engineering Report– One-off Custom Basket
0	None	N/A	1/11/2011	Flight Test Report – Transport Canada
0	SOC940	0	14/11/2011	Statement of Compliance
2	SOC940.90	0	04/04/2016	Statement of Compliance – One-off Custom Basket
1	SU940	1	01/08/2014	Signed Undertaking of CAR 521 Division VIII
2	TR940.91	0	30/03/2016	Load Test Plan and Report– One-off Custom Basket

DOCUMENT CONTROL LIST

(The Current Approval/Configuration Control List for Fabricated Parts, Assemblies and Other Documents and a Complete Listing of the Applicable Design Compliance Documents)

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
FABRICATION AND ASSEMBLY DOCUMENTS				
1	94010	1	10/07/2014	Cargo Basket Assembly
1	94011	1	11/07/2014	Basket Fabrication
1	94012	1	10/07/2014	Lid Fabrication
1	94023	1	11/07/2014	Attachment Hoop
1	94027	1	10/07/2014	Placard
1	94030	1	11/07/2014	Hoop
1	49215	1	13/03/2014	Spacer
1	49216	1	13/03/2014	Spacer
1	84240	0	21/05/2014	Lid Brace Installation
1	84255	2	13/03/2014	Handle Assembly
1	84261	2	13/03/2014	Handle Bar Assembly
1	84262	2	14/02/2014	Basket Handle Provisions Assembly
1	84263	0	14/02/2014	Lid Handle Provisions Assembly
1	84265	2	13/03/2014	Handle Lever
1	84267	1	13/03/2014	Handle Bracket
1	84272	1	13/03/2014	Bushing

DCL REVISION CONTROL				
DCL REV.	DCL REV. DATE	REVISION BY	APPROVED BY	DESCRIPTION
0	03/11/2011	Richard Rathwell	TCCA - PNR	Original
1	17/07/2014	Jeff Clarke	TCCA - PNR	Update to new address. Minor changes to fabrication drawings.
2	04/04/2016	Jeff Clarke	DAR 304	DCL format updated. One-off custom basket assembly added

APPROVAL:

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH
APR 0 4 2016
APPROVED
BY: DAR 304
CERT. NO.: SH08-16
ISSUE NO.: 5

Aero Design Ltd.
9888A Malaspina Road
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Tel: 604.483.2376 www.aerodesign.ca

Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Extra-Long Basket Assembly

Document Control List Number	Revision	Sheet
DCL940-3	**2**	**1 of 2**

DOCUMENT CONTROL LIST

(Listing of Current Approved and Accepted Documents)

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
APPROVAL DOCUMENT				
1	SH08-16	5	08/09/2014	TCCA STC Approval, approval date 11/04/2008
0	SR02680NY	0	06/08/2012	FAA STC Approval, approval date 25/02/2009
DOCUMENTS SITED ON THE APPROVAL DOCUMENT				
1	94001	1	08/07/2014	Quick Release Cargo Basket Installation
1	ICA764.90	6	15/07/2014	Instructions for Continued Airworthiness
1	FMS764.91	4	16/07/2014	Flight Manual Supplement
FABRICATION AND OTHER DOCUMENTS				
2	DCL940-3	2	04/04/2016	Document Control List for Quick Release Cargo Basket Assembly

DCL REVISION CONTROL				
DCL REV.	DCL REV. DATE	REVISION BY	APPROVED BY	DESCRIPTION
0	03/11/2011	Richard Rathwell	TCCA - PNR	Original – added to SH08-16 Issue 4
1	17/07/2014	Jeff Clarke	TCCA - PNR	Documents updated for new address.
2	04/04/2016	Jeff Clarke	DAR 304	DCL format updated. DCL940-3 updated.

APPROVAL:

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH
APR 04 2016
APPROVED
BY: DAR 304
CERT. NO.: SH08-16
ISSUE NO.: 5

Aero Design Ltd.
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Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Extra-Long Basket Installation (Configuration F)

Document Control List Number	Revision	Sheet
DCL940-1	2	1 of 1

DOCUMENT CONTROL LIST

DOCUMENT NO.	DOCUMENT CONTENT	REVISION
	FABRICATION DOCUMENTS	
78410	Cargo Basket Assembly	2
78411	Basket Fabrication	3
78412	Lid Fabrication	2
78427	Placard	2
76421	Hoop	1
76423	Attachment Hoop	3
49215	Spacer	1
49216	Spacer	1
84240	Lid Brace Installation	0
84255	Handle Assembly	2
84261	Handle Bar Assembly	2
84262	Basket Handle Provisions Assembly	2
84263	Lid Handle Provisions Assembly	0
84265	Handle Lever	2
84267	Handle Bracket	1
84272	Bushing	1
36273	Lid Bracket	2
36274	Bushing	3
36275	Bushing	4
36277	Handle Bar	1
36278	Spring	3
36280	Lid Brace Assembly	3
	ENGINEERING DOCUMENTS	
ER764.01	Engineering Report	0
TR764.02	Test Plan and Report	0
FTP764.03	Flight Test Plan and Report	0
ER764.04	Engineering Report	0
ER764.05	Engineering Report	0
	Flight Test Report – Transport Canada	

APPROVAL:

Transport Canada / Transports Canada
AIRCRAFT CERTIFICATION DIVISION
APPROVED
By
Appr'l No. SH08-16
Appr'l Date 2008-04-11
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SHEET 1 OF 1

Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Long Basket Assembly

DCL784-3

Rev. **4**

DOCUMENT CONTROL LIST

DOCUMENT NO.	DOCUMENT CONTENT	REVISION
	INSTALLATION DOCUMENTS	
78401	Quick Release Cargo Basket Installation	4
ICA764.90	Instructions for Continued Airworthiness	6
FMS764.91	Flight Manual Supplement	4
	FABRICATION DOCUMENTS	
DCL784-3	Document Control List for Quick Release Cargo Basket Assembly	4

APPROVAL:

Transport Canada / Transports Canada
AIRCRAFT CERTIFICATION DIVISION
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SHEET 1 OF 1

Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Long Basket Installation

DCL784-1

Rev. **4**

DOCUMENT CONTROL LIST

DOCUMENT NO.	DOCUMENT CONTENT	REVISION
	FABRICATION DOCUMENTS	
76410	Cargo Basket Assembly	3
76411	Basket Fabrication	3
69812	Lid Fabrication	4
76421	Hoop	1
76422	Attachment Hoop	1
76423	Attachment Hoop	3
76427	Placard	2
49215	Spacer	1
49216	Spacer	1
69823	Lug	2
84240	Lid Brace Installation	0
84255	Handle Assembly	2
84261	Handle Bar Assembly	2
84262	Basket Handle Provisions Assembly	2
84263	Lid Handle Provisions Assembly	0
84265	Handle Lever	2
84267	Handle Bracket	1
84272	Bushing	1
36273	Lid Bracket	2
36274	Bushing	3
36275	Bushing	4
36277	Handle Bar	1
36278	Spring	3
36280	Lid Brace Assembly	3
	ENGINEERING DOCUMENTS	
ER764.01	Engineering Report	0
TR764.02	Test Plan and Report	0
FTP764.03	Flight Test Plan and Report	0
ER764.04	Engineering Report	0
ER764.05	Engineering Report	0
	Flight Test Report – Transport Canada	

APPROVAL:

Transport Canada / Transports Canada
AIRCRAFT CERTIFICATION DIVISION
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SHEET 1 OF 1

Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Medium Basket Assembly

DCL764-3

Rev. **4**

DOCUMENT CONTROL LIST

DOCUMENT NO.	DOCUMENT CONTENT	REVISION
	INSTALLATION DOCUMENTS	
76401	Quick Release Cargo Basket Installation	4
ICA764.90	Instructions for Continued Airworthiness	7
FMS764.91	Flight Manual Supplement	4
	FABRICATION DOCUMENTS	
DCL764-3	Document Control List for Quick Release Cargo Basket Assembly	4

APPROVAL:

Transport Canada / Transports Canada
AIRCRAFT CERTIFICATION DIVISION
APPROVED
By
Appr'l No. SH08-16
Appr'l Date 2008-04-11
Issue No. 5
Issue Date 2014-09-08
YY - MM - DD

ORIGINAL DATE:
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REVISION DATE:
17 July 2014

Aero Design Ltd.
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SHEET 1 OF 1

Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Medium Basket Installation

DCL764-1

Rev. 4

DOCUMENT CONTROL LIST

DOCUMENT NO.	DOCUMENT CONTENT	REVISION
	FABRICATION DOCUMENTS	
77610	Cargo Basket Assembly	2
77611	Basket Fabrication	2
77612	Lid Fabrication	2
77627	Placard	1
76421	Hoop	1
76422	Attachment Hoop	1
49215	Spacer	1
49216	Spacer	1
69823	Basket Components - Lug	2
84240	Lid Brace Installation	0
84255	Handle Assembly	2
84261	Handle Bar Assembly	2
84262	Basket Handle Provisions Assembly	2
84263	Lid Handle Provisions Assembly	0
84265	Handle Lever	2
84267	Handle Bracket	1
84272	Bushing	1
36273	Lid Bracket	2
36274	Bushing	3
36275	Bushing	4
36277	Handle Bar	1
36278	Spring	3
36280	Lid Brace Assembly	3
	ENGINEERING DOCUMENTS	
ER764.01	Engineering Report	0
TR764.02	Test Plan and Report	0
FTP764.03	Flight Test Plan and Report	0
ER764.04	Engineering Report	0
ER764.05	Engineering Report	0
	Flight Test Report – Transport Canada	

APPROVAL:

Transport Canada / Transports Canada
AIRCRAFT CERTIFICATION DIVISION
APPROVED
By
Appr'l No. SH08-16
Appr'l Date 2008-04-11
Issue No. 5
Issue Date 2014-09-08
YY - MM - DD

ORIGINAL DATE:
06 March 2008
REVISION DATE:
17 July 2014

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SHEET 1 OF 1

Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Short Basket Assembly

DCL776-3

Rev. **3**

DOCUMENT CONTROL LIST

DOCUMENT NO.	DOCUMENT CONTENT	REVISION
	INSTALLATION DOCUMENTS	
77601	Quick Release Cargo Basket Installation	4
ICA764.90	Instructions for Continued Airworthiness	6
FMS764.91	Flight Manual Supplement	4
	FABRICATION DOCUMENTS	
DCL776-3	Document Control List for Quick Release Cargo Basket Assembly	3

APPROVAL:

Transport Canada / Transports Canada
AIRCRAFT CERTIFICATION DIVISION
APPROVED
By
Appr'l No. SH08-16
Appr'l Date 2008-04-11
Issue No. 5
Issue Date 2014-09-08
YY - MM - DD

ORIGINAL DATE:
06 March 2008
REVISION DATE:
17 July 2014

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SHEET 1 OF 1

Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Short Basket Installation

DCL776-1

Rev. **4**

DOCUMENT CONTROL LIST

(The Current Approval/Configuration Control List for Fabricated Parts, Assemblies and Other Documents and a Complete Listing of the Applicable Design Compliance Documents)

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
FABRICATION AND ASSEMBLY DOCUMENTS				
5	78620 ✓	5	02/08/2016	Clamp Fabrication
4	78621	1	14/07/2014	Cargo Pod Compatible Clamp Fabrication (Replaced By: 78622)
5	78622 ✓	0	06/09/2016	Cargo Pod Compatible Clamp Fabrication
4	78633 ✓	1	14/07/2014	Aft Beam Fabrication
4	78634	1	14/07/2014	Forward Beam Fabrication (Replaced By: 78635)
5	78635 ✓	0	06/09/2016	Forward Beam Fabrication

DCL REVISION CONTROL				
DCL REV.	DCL REV. DATE	REVISION BY	APPROVED BY	DESCRIPTION
0	06/03/2008	R. Rathwell	TCCA - PNR	Original.
1	05/03/2009	R. Rathwell	DAR 290M	High mounting beam drawing updated.
2	01/02/2010	J. Clarke	TCCA - PNR	Clamp changed to T-bolt configuration; mid height beam added, light wall beam configurations added.
3	16/06/2010	J. Clarke	TCCA - PNR	Cargo pod compatible configuration added; beam configurations replaced with new.
4	17/07/2014	J. Clarke	TCCA - PNR	Documents updated for new address.
5	06/09/2016	J. Clarke	DAR 304	DCL format updated. Changes to cargo pod clamps and forward beam

APPROVAL:

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION BRANCH
06 SEP 2016
APPROVED
BY: [signature] DAR 304
CERT. NO.: SH08-16
ISSUE NO.: 5

Aero Design Ltd.
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Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Attachment Provisions Assembly

Document Control List Number	Revision	Sheet
DCL786-3	**5**	**1 of 2**

DOCUMENT CONTROL LIST

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
DESIGN COMPLIANCE DOCUMENTS				
5	CP-SH08-16	1	06/09/2016	Certification Plan-Record for Minor Design Changes
0	ER764.01	0	29/02/2008	Engineering Report
2	ER764.04	0	22/01/2010	Engineering Report
3	ER764.05	0	16/06/2010	Engineering Report
5	ER786.01	0	06/09/2016	Engineering Report, Qualification of Minor Changes
0	FTP764.03	0	26/02/2008	Flight Test Plan and Report
5	SU940	1	01/08/2014	Signed Undertaking iaw CAR 521 Division VIII
0	TR764.02	0	29/02/2008	Load Test Plan and Report

DOCUMENT CONTROL LIST

(Listing of Current Approved and Accepted Documents)

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
APPROVAL DOCUMENT/S				
4	SH08-16	5	08/09/2014	TCCA STC Approval, approval date 11/04/2008
4	SR02680NY	1	06/08/2012	FAA STC Approval, approval date 25/02/2009
DOCUMENTS SITED ON THE APPROVAL DOCUMENT/S				
5	ICA764.90	7	06/09/2016	Instructions for Continued Airworthiness
INSTALLATION & INSTALLATION SUPPORT DOCUMENTS				
4	78602	1	14/07/2014	Attachment Provisions Installation
5	78603	2	06/09/2016	Cargo Pod Compatible Attachment Provisions Installation
5	SB786.01	0	06/09/2016	Service Bulletin Cargo Pod Compatible Clamps, One-Time Inspection
FABRICATION AND OTHER DOCUMENTS				
5	DCL786-3	5	06/09/2016	Document Control List for Attachment Provisions Assembly

DCL REVISION CONTROL				
DCL REV.	DCL REV. DATE	REVISION BY	APPROVED BY	DESCRIPTION
0	06/03/2008	R. Rathwell	TCCA - PNR	Original.
1	05/03/2009	R. Rathwell	DAR 290M	Installation drawing and fabrication DCL updated.
2	01/02/2010	J. Clarke	TCCA - PNR	Documents updated for mid height configuration.
3	16/06/2010	J. Clarke	TCCA - PNR	Documents updated for light wall configuration.
4	17/07/2014	J. Clarke	TCCA - PNR	Documents updated for new address.
5	06/09/2016	J. Clarke	DAR 304	DCL format updated. DCL786-3, ICA764.90 and 78603 updated, SB786.01 added for replacement parts.

APPROVAL:
(Minor ICA PN changes are accepted.)

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION BRANCH
06 SEP 2016
APPROVED
BY: DAR 304
CERT. NO.: SH08-16
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Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket Attachment Provisions Installation (Configuration A)

Document Control List Number	Revision	Sheet
DCL786-1	5	1 of 1

CERTIFICATION PLAN

CP940

AIRBUS HELICOPTERS (EUROCOPTER)

AS350 SERIES & AS355 SERIES

EXTERNAL CARGO BASKET

Prepared by: Jeff Clarke, P.Tech.(Eng.)

Revision 2, 27 July 2016

Aero Design Ltd.

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RECORD OF REVISIONS		
Rev.	Date	Content Description and Changes
0	06/02/2008	Original issue (CP764) – Compliance Program Checklist. **Accepted by TCCA – PNR**
0	20/10/2011	Original issue (CP940) – Compliance Program Checklist. **Accepted by TCCA – PNR**
1	05/07/2014	Convert from Compliance Program Checklists to Certification Plan. Plan supplements original checklists. Plan to update holder following move to Powell River and incorporate minor changes. **Accepted by TCCA – PNR 17/10/2014**
2	27/07/2016	Add record of revisions. This Plan is for incorporating minor changes to the forward mounting beam and attachment clamps.

TABLE OF CONTENTS

1.0 INTRODUCTION

This certification plan details the means and methods of compliance for the Airworthiness Requirements shown on the Compliance Program (Appendix A). This document supplements the original Compliance Programs, CP764 Rev. 0 and CP940 Rev. 0, which are identical.

The minor changes incorporated at this time do not require reissue of approval SH08-16.

2.0 PERSONNEL

Applicant: Aero Design Ltd. – Jeff Clarke, P.Tech.(Eng.)

Delegate: James Tinson, DAR 304

Transport Canada: Michael Chan, Pacific Region

3.0 PROJECT DESCRIPTION

Installation of quick release mounting provisions on the landing gear cross tubes. The provisions consist of a pair of stainless steel mounting beams attached with aluminum clamps to the landing gear cross tubes.

Installation of a cargo basket on the mounting provisions. The cargo basket uses the same construction and attachment means as other approved Aero Design Ltd. baskets. There are 4 different sizes, ranging from 56" to 96".

This change incorporates minor changes to the attachment provisions following issues reported by operators.

4.0 BASIS OF CERTIFICATION

4.1 Type Certificates

Model: Airbus Helicopters AS350 D, B, BA, B1, B2, B3

TCDS:

- TCCA: H-83 Issue 22
- FAA: H9EU Revision 23
- EASA: R.008 Issue 8

Model: Airbus Helicopters AS355 E, F, F1, F2, N, NP

TCDS:

- TCCA: H-87 Issue 9
- FAA: H11EU Revision 10
- EASA: R.146 Issue 2

4.2 TCCA Basis of Certification

4.2.1 AS350 – TCDS H-83, Issue 23

The certification basis is as follows (AS350B3, most recent):

FAR 27 effective February 1, 1965 including Amdts 27-1 through 27-10.

DGAC Special Conditions notified by DGAC letter 971726 dated April 3, 1997, plus TCCA Additional Airworthiness Requirement as published in Airworthiness Manual Chapter 527 (Normal Category Rotorcraft) First Edition, July 1986:

a) 527.1301-1 Rotorcraft Operations After Ground Cold Soak
b) 527.1557(c)(3) Miscellaneous Markings and Placards
c) 527.1581 Rotorcraft Flight Manual
d) 527.1583(h) Operating Limitations, Ambient Temperature

4.2.2 AS355 – TCDS H-87, Issue 9

The certification basis is as follows (AS355NP, most recent):

1) FAR 27 Amendment 20, dated March 26,1984, (such as modified by CTC 27) plus the following paragraphs of Amendment 21, dated December 6,1984:

27.21, 27.45, 27.71, 27.79, 27.143, 27.151, 27.161, 27.173, 27.175, 27.177, 27.672, 27.673, 27.729, 27.735, 27.779, 27.807, 27.1329, 27.1413, 27.1519, 27.1525, 27.1555, 27.1585, 27.1587; Plus FAR 27 amendment 23, paragraph 27.923.

2) In support of Category A operations, the following FAR paragraphs (CRI A-3):

Amdt 0: 29.953(a); 29.1187(e); 29.1201
Amdt 3: 29.1191(a)(l)
Amdt 13: 29.1197
Amdt 14: 29.1309(b) (2)(i) and (d)
Amdt 17: 29.1195(a) and (d)
Amdt 24: 29.45(a) and (b)(2); 29.1331(b)
Amdt 26: 29.901(c); 29.908(a); 29.1027(a); 29.1045(a)(l) (b) (c) (d) and (f); 29.1047(a); 29.1181(a); 29.1189(c); 29.1193(e)
Amdt 30: 29.861(a)
Amdt 36: 29.903(b)(c) and (e)
Amdt 39: 29.49(a); 29.51; 29.53; 29.55; 29.60; 29.61; 29.64; 29.65(a); 29.75; 29.79; 29.87(a)
Amdt 40: 29.917(c)(1) - Rotor drive system: Design; 29.1305(b)
Amdt 44: 29.59; 29.62; 29.67(a); 29.77; 29.81; 29.85; 29.1323(c)(1); 29.1587(a)

3) Special Conditions:

a) Limit pilot forces, engine air intake protection against 2 lb bird and hail ingestion and the engine governing system as documented in DGAC letter No. 54408 dated October 21, 1988.

b) Protection against the effects of High Intensity Radiated Fields (CRI F-1).

4) Equivalent Safety Findings: Powerplant instrument markings (CRI F-4).

5) Environmental Standards:

a) Noise: CS36 (Provisions of Chapter 8 of ICAO Annex 16, Volume I, Part 11);

b) Fuel Venting: CS-34 (Provisions of Chapter 11 of ICAO Annex 16, Volume 11, Part 11)

6) Additional Airworthiness Requirements (AARs) Canadian Airworthiness Manual, Chapter 527 (Normal Category Rotorcraft):

a) 527.1093(b)(l)(ii) and (iii) Induction System Icing Protection

b) 527.1301-1 Rotorcraft Operations After Ground Cold Soak

c) 527.1557(c) (3) Miscellaneous Markings and Placards

d) 527.1583(h) Ambient Temperature Limitation

4.3 Equivalency of Canadian to FAA Basis of Certification

This section addresses the FAA basis of certification for which this approval may be familiarized following issue of the Canadian approval.

4.3.1 AS350 – TCDS H9EU, Revision 23

The Canadian basis of certification defined on TCDS H-83 is the same as the FAA basis of certification defined on TCDS H9EU.

4.3.2 AS355 – TCDS H11EU, Revision 10

The Canadian basis of certification defined on TCDS H-87 is the same as the FAA basis of certification defined on TCDS H11EU.

4.4 Equivalency of Canadian to EASA Basis of Certification

This section addresses the EASA basis of certification for which this approval may be familiarized following issue of the Canadian approval.

4.4.1 AS350 – TCDS R.008, Issue 8

The Canadian basis of certification defined on TCDS H-83 is the same as the EASA basis of certification defined on TCDS R.008.

4.4.2 AS355 – TCDS R.146, Issue 2

The Canadian basis of certification defined on TCDS H-87 is the same as the EASA basis of certification defined on TCDS R.146.

4.5 This Modification

4.5.1 Changed Product Rule

The basis of certification for this modification has been considered in accordance with CAR 521.158 - Standards of Airworthiness, SI 521-004 and SI 521-005, and AC 500-16. The Changed Product Rule Decision Record was completed in Project Summary PS940 Revision 0 dated 20 October 2011 by E. Burgoin, DAR 290M, and documents the following findings with regards to this modification:

- this modification is not substantial
- the latest standards will not be used
- this change is not significant
- the basis of certification for this modification remains the same as the original basis of certification for the aircraft as defined in the TCDS.

4.5.2 Basis of Certification Summary

This section is to define the basis of certification to be used on the certificate; refer to Section 6 and Compliance Program Checklist in Appendix A for details.

STC SH08-16 includes the following statement:
The basis of certification remains as defined in the applicable Type Certificate Data Sheets.

There is no change to the basis of certificate for the modification.

5.0 APPLICABILITY OF AIRWORTHINESS DIRECTIVES

Airworthiness Directives applicable to the Eurocopter AS350 and AS355 (all models) were reviewed on 27 July 2016, and none were found to affect this project.

6.0 CERTIFICATION PLAN

Minor changes to the approved drawings are incorporated to the design. Findings of compliance made in accordance with this plan are only applicable to the changes indicated.

6.1 FAR 27 Subpart B – Flight

No change.

6.2 FAR 27 Subpart C – Strength Requirements

Paragraphs 27.301, .303, .305, .307, .337(a), .561

6.2.1 Means of Compliance

a) Analysis

6.2.2 Method of Compliance

a) Comparison to existing approved configuration. New configuration has equivalent or higher strength than original configuration.

6.2.3 Compliance Documents, Data and Testing

Engineering Report ER786.01, Revision 0

6.2.4 Schedule

None.

6.2.5 Level of Delegation

FAR 27.305, .307 delegated

6.2.6 Level of Involvement / Service

Deliverable	Transport Canada Service
None	

6.3 FAR 27 Subpart D – Design Requirements

Paragraphs 27.601, .603, .605, .609, .611, .613, .625, .787

6.3.1 Means of Compliance

a) Review and inspect

6.3.2 Method of Compliance

a) Specifications on fabrication drawings

6.3.3 Compliance Documents, Data and Testing

a) Fabrication drawings

1. 78620, Revision 5 – Clamp Fabrication
2. 78621, Revision 2 – Clamp Fabrication (Cargo Pod Compatible)
3. 78634, Revision 2 – Forward Beam Fabrication

6.3.4 Schedule

Not applicable

6.3.5 Level of Delegation

FAR 27.601, .603, .605, .609, .611 delegated

6.3.6 Level of Involvement / Service

Deliverable	Transport Canada Service
None	

APPENDIX A

COMPLIANCE PROGRAM CHECKLIST

APPLICANT: Aero Design Ltd.
9888 A Malaspina Road
Powell River, BC, Canada
V8A 0G3

CORRESPONDANCE TO:
(If other than applicant)

DATE: 0 20 October 2011 (Original)
REVISION No. 2 27 July 2016

MAKE: Airbus Helicopters (Eurocopter)
MODEL: AS350 B, B1, B2, B3, BA, D; AS355 E, F, F1, F2, N, NP

REGISTRATION: All Eligible
SERIAL No.: All Eligible

NATURE OF WORK: External Attachment Provisions Installation; Quick Release Cargo Basket Installation
TYPE CERTIFICATE DATA SHEET: H-83 issue 22 / H-87 issue 9
MODEL CERTIFICATION BASIS: FAR 27 dated 1 February 1965, including amendments 27-1 thru 27-20 (AS355 NP basis, highest of all models)
MODIFICATION CERTIFICATION BASIS: FAR 27 dated 1 February 1965, including amendments 27-1 thru 27-20 (AS355 NP basis)

Airworthiness Requirement	Change from CP Rev. 0	Subject for Compliance or Documentary Proof	Form of Substantiation	DOT	DAR	Comments
Subpart B		**Flight**				
27.27	No	Centre of Gravity Limits	N/A			No Change from Type Approval
27.29	No	Empty Weight and Corresponding C of G	Data specified on inst'n drawing			
27.45	No	Performance - General	Flight Test			
27.51	No	Takeoff	Flight Test			
27.65	No	Climb: All Engines Operating	Flight Test			
27.71	No	Gliding Performance	Flight Test			
27.73	No	Performance at Min. Operating Speed	Flight Test			
27.75	No	Landing	Flight Test			
27.141	No	Flight Characteristics – General	Flight Test			Flight test in accordance with FTP764.03 and flight test performed by Transport Canada
27.143	No	Controllability and Maneuverability	Flight Test			
27.151	No	Flight controls	Flight Test			
27.161	No	Trim Control	Flight Test			Flight test in accordance with FTP940.03 and flight test performed by Transport Canada
27.171	No	Stability – General	Flight Test			
27.173	No	Longitudinal Stability	Flight Test			
27.175	No	Demonstration of Longitudinal Stability	Flight Test			
27.177	No	Static Directional Stability	Flight Test			
27.241	No	Ground Resonance	Flight Test			
27.251	No	Vibration	Flight Test			

Airworthiness Requirement	Change from CP Rev. 0	Subject for Compliance or Documentary Proof	Form of Substantiation	DOT	DAR	Comments
Subpart C		**Strength Requirements**				
27.301	No	Loads – Air Drag Loads	Analysis			
27.301	No	Loads – Inertia Loads	Compliance with 27.337 and 27.561			
27.303	No	Factor of Safety	Analysis			
27.305	**YES**	Strength and Deformation	Discussion in ER786.01, Revision 0		X	
27.307	**YES**	Proof of Structure			X	
27.337(a)	No	Limit Maneuvering Load Factor - Positive	Analysis and Test			Critical load factor in downward direction.
27.547	No	Main Rotor Structure	Flight Test			See comments above
27.561	No	Emergency Landing Conditions	Analysis and Test			
27.561(b)(3)(i)	No	Emergency Landing Conditions – Up	Analysis and Test			
27.561(b)(3)(ii)	No	Emergency Landing Conditions – Forward	N/A			Forward deflection or failure of basket poses no threat to occupants.
27.561(b)(3)(iii)	No	Emergency Landing Conditions – Side	Analysis and Test			
27.561(b)(3)(iv)	No	Emergency Landing Conditions – Down	Compliance with 27.337			27.337 Maneuvering Load is Critical.
Subpart D		**Design and Construction**				
27.601	**YES**	Design	Fabrication drawings per DCL786-3 Revision 5		X	Design is conventional.
27.603	**YES**	Materials			X	Materials used are specified in Mil-Hdbk-5J.
27.605	**YES**	Fabrication Methods			X	Design is conventional.
27.609	**YES**	Protection of Structure			X	
27.611	**YES**	Inspection Provisions			X	Design is easy to inspect.
27.613	No	Material Strength Properties and Design Values	Values used as per Mil-Hdbk-5J			
27.625	No	Fitting Factor	Analysis			
27.783	No	Doors	N/A			Installation does not block doors.
27.787(a)	No	Cargo and Baggage Compartments	Compliance with 23.301 through 307			
27.787(b)	No	Cargo and Baggage Compartments	Design			Basket is a closed container.
27.787(c)	No	Cargo and Baggage Compartments	N/A			Cargo is external to helicopter.
27.787(d)	No	Cargo and Baggage Compartments	N/A			No cargo lamps.
27.807	No	Emergency Exits	N/A			Installation does not block doors.
27.1387	No	Position Light System Dihedral Angles	N/A – statement in report			No change from Type Approval.
27.1401	No	Anticollision Light System	N/A – statement in report			No change from Type Approval.

Airworthiness Requirement	Change from CP Rev. 0	Subject for Compliance or Documentary Proof	Form of Substantiation	DOT	DAR	Comments
Subpart G		**Operating Limitations and Information**				
27.1505	No	Never Exceed Speed	Flight Test, Flight Manual Supplement			V_{NE} limits as specified in the existing Flight Manual Supplement (110 kts.)
27.1525	No	Kinds of Operation	Flight Manual Supplement			Limited to VFR only.
27.1529	No	Instructions for Continuing Airworthiness	ICA Provided			
27.1557(a)	No	Miscellaneous Markings and Placards – Baggage Compartments	Placard			
27.1557(b)	No	Miscellaneous Markings and Placards	N/A			
27.1557(c)	No	Miscellaneous Markings and Placards	N/A			
27.1557(d)	No	Miscellaneous Markings and Placards	N/A			
27.1581	No	Rotorcraft Flight Manual – General	Flight Manual Supplement			
27.1583(c)	No	Operating Limitations – Weight and Loading Information	Flight Manual Supplement			
27.1585	No	Operating Procedures	Flight Manual Supplement			
27.1587	No	Performance Information	Flight Manual Supplement			
27.1589	No	Loading Information	Flight Manual Supplement & Placard			Placard installed on basket lid
Canadian Airworthiness Manual Chapter 527, change 527-3, dated 3 January 1994						
527.1093(b) (1)(ii)+(iii)	No	Induction System Icing Protection	N/A			No change from Type Approved configuration
527.1301-1	No	Rotorcraft Operations After Ground Cold Soak	N/A			No change from Type Approved configuration
527.1557 (c) (3)	No	Miscellaneous Marking and Placards	N/A			No change from Type Approved configuration
527.1581	No	Flight Manual - General	Flight Manual Supplement			SI/Imperial units provided
527.1583 (h)	No	Operating Limitations – Ambient Temperature	N/A			No change from Type Approved configuration

SERVICE BULLETIN SB786.01

Airbus Helicopters AS350 & AS355 Cargo Pod Compatible Mounting Provisions – 78603-01-XX

1. Planning Information

A) Effectivity

Airbus Helicopters AS350 & AS355 series helicopters equipped with Aero Design Ltd. Cargo Pod Compatible Mounting Provisions Installation 78603-01-01 (RH) or 78603-01-02 (LH) in accordance with drawing 78603.

B) Reason

A report was received that cracks were found in the clamp assemblies used for the cargo pod compatible mounting provisions installation during an inspection in accordance with the ICA schedule.

C) Description

This service bulletin specifies a one time inspection of the clamp assemblies and replacement information.

D) Approval

The engineering design aspects of this bulletin are Transport Canada approved.

E) Manpower

Approximately 1 man hour is required to inspect the clamp assemblies, not including any refinishing that may be necessary.

Approximately 1 man hour is required to replace the clamp assemblies if cracks are found.

Aero Design Ltd.

9888A Malaspina Road, Powell River, BC, V8A 0G3
Phone: 604-483-2376
Fax: 604-483-2372
www.aerodesign.ca

F) Price and availability

Attachment clamps found to be cracked will be replaced at no charge.

Contact Aero for warranty.

G) Weight and Balance

Not affected.

H) Electrical Load Data

Not affected.

I) References

Instructions for Continued Airworthiness ICA764.90, Revision 6

J) Electrical Load Data

Not affected.

2. Accomplishment Instructions

A) Within the next 10 flight hours accomplish this mandatory one time inspection.

IAW elementary maintenance requirements

B) Visually inspect Attachment Clamp 78621-05, -06, -07 and -08 using a 10 power magnifying glass. Pay particular attention to the web area at the lug connection to the strap. Strip paint from web area in accordance with the AS350 Maintenance Manual procedures.

if crack is suspect

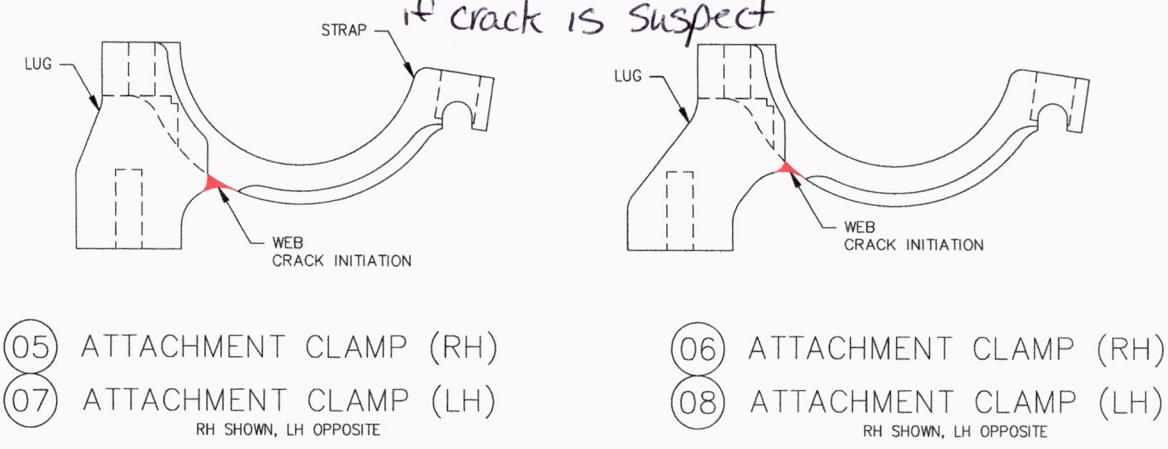

Figure 1 – Attachment Clamp

C) If no cracks are found, refinish in accordance with ICA764.90.

D) If cracks are found, within the next 10 flight hours with a cargo basket or equipment installed on the mounting provisions replace the Attachment Clamps in accordance with the instructions in ICA764.90. New part numbers as follows:

i. 78621-05R2 – Right hand attachment clamp

ii. 78621-06R2 – Right hand forward top attachment clamp

iii. 78621-07R2 – Left hand attachment clamp

iv. 78621-08R2 – Left hand forward top attachment clamp

ENGINEERING REPORT

ER786.01

AIRBUS HELICOPTERS AS350 / AS355 SERIES

ATTACHMENT PROVISIONS

Prepared by: Jeff Clarke, P.Tech.(Eng.)

Revision 0, 02 August 2016

Aero Design Ltd.

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TABLE OF CONTENTS

1.0 INTRODUCTION

The mounting provisions on the Airbus Helicopters AS350 and AS355 series helicopters are re-evaluated to address two issues recently reported by operators in the field:

1. One operator has reported that following landing in deep snow, the guide tube for the quick release pin mechanism in the forward mounting beam was deflected, making release of the basket difficult due to mis-alignment of the stop pin with the hole on the far side of the beam.
2. One operator has reported cracking in the clamps of the cheek pod compatible provisions installation, 78603-01-XX. The crack was found during an inspection in accordance with the ICA specified schedule. The operator then inspected of all mounts in their fleet, locating 5 clamps in total with cracks, all in the same area of the clamp.

This report details the method of compliance for the paragraphs of FAR 27 listed in the Certification Plan, CP940, Revision 1. It includes:

- Evaluation of an additional weld on the guide tube on the forward beam
- Evaluation of modification to the cargo pod compatible clamps to increase the contact area between the lug and strap, and to remove the web feature where cracks have initiated.

2.0 REFERENCE TEXT

Aero Design Ltd. Drawing 78620, Revision 5 – Clamp Fabrication

Aero Design Ltd. Drawing 78621, Revision 2 – Cargo Pod Compatible Clamp Fabrication

Aero Design Ltd. Drawing 78634, Revision 2 – Forward Mounting Beam Fabrication

Aero Design Ltd. Instructions for Continued Airworthiness, ICA764.90, Revision 6

3.0 BASIS OF CERTIFICATION

Refer to Certification Plan CP940, Revision 2, Section 3.0 for the applicable basis of certification.

4.0 78634 FORWARD BEAM FABRICATION

4.1 Discussion

The quick release mechanism consists of a spring loaded pin installed in a guide tube. The existing welds on the guide tube are located near the top end of the guide tube. When the basket is loaded upward, such as by landing in snow, the basket attachment lug pushes on the side of the stop pin, which then causes the guide tube to rotate on the single rosette weld, until the stop pin touches the far side of the keyway. Deflection of the guide tube does not allow the basket attachment to come free of the keyway as deflection is limited by the stop pin contacting the far side of the keyway, approximately 1/16". To resist rotation of the guide tube, an additional rosette weld is added near the bottom of the guide tube.

The approved configuration with one weld on the guide tube has been demonstrated to support the upward loads required with one rosette weld on both sides of the beam. Strength of the modified beam is increased over the existing approved configuration. Weight change is negligible. The part number is identified as 78634-01-00R2 to differentiate from earlier configurations.

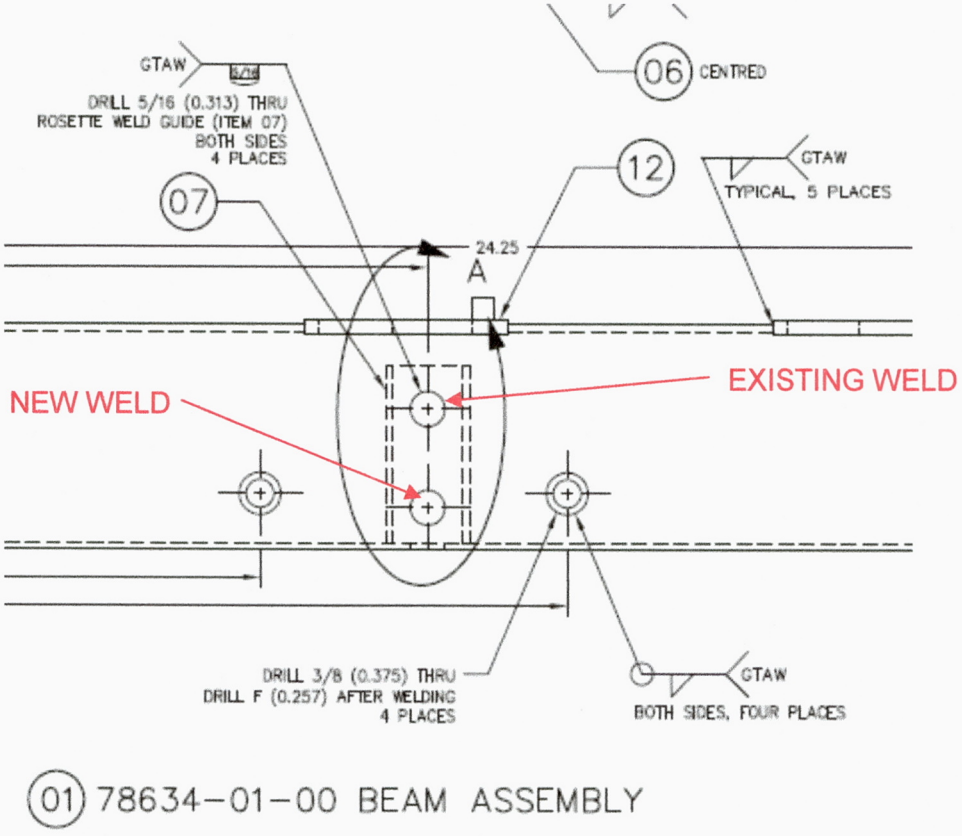

Figure 4.0.1 – Excerpt from drawing 78634, Rev. 2

4.2 Dissemination

The operator that reported this issue is using the basket for heli-ski operations, landing in snow. There are approximately 175 Aero Design AS350/AS355 cargo basket installations in the field. Many operators use cargo baskets for the same operation. Deflection of the stop pin has not

been reported by any other operators. Given that the issue appears to be limited to this one operator and not across the entire fleet using Aero Design baskets, the change will be incorporated starting with the next batch of production parts. Operators reporting this issue will be advised of the new part.

5.0 78621 CARGO POD CLAMP FABRICATION

5.1 Discussion

The cargo pod clamps are used to shift the basket attachments outboard by 2 inches in order to allow the basket lid to open fully when installed under an aft cargo compartment extender (also known as a cargo pod or "squirrel cheek"). The threaded lug for attaching the mounting beams is shifted outboard and down in order to maintain the same vertical position of the beam.

The reported cracks originate in the web connecting the attachment lug section on the bottom side of the clamp to the strap section. This web is created by intersecting radiuses on both sides of the part, causing the thickness to vary across the section.

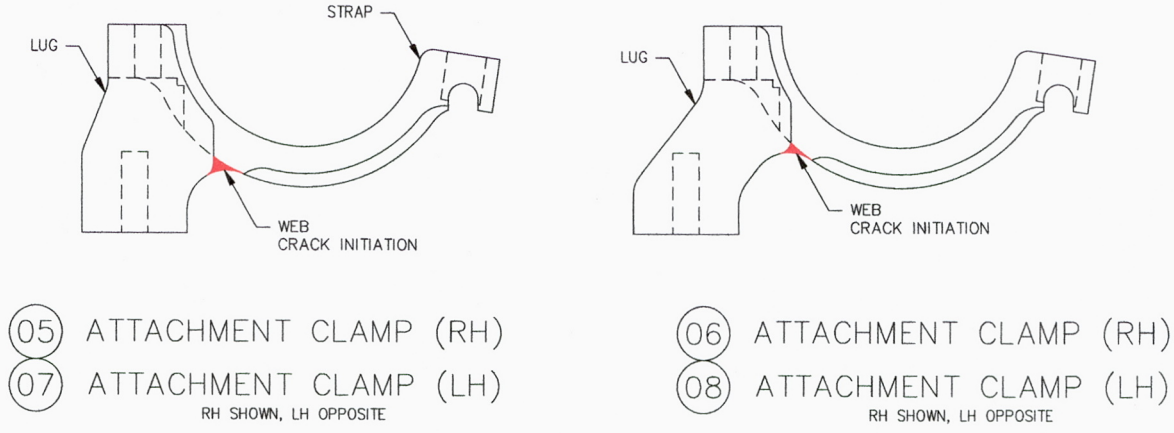

Figure 5.1 – Attachment Clamp – Original Configuration

Figure 5.2 – Typical Cracked Attachment Clamp

In order to prevent cracking, the lug section is modified to remove the thin web area where the cracks are initiating by extending the lug section further onto the strap section. The inside radius at the connection from the lug to the strap is increased, and more area is provided to run out the radius on both sides so they do not overlap forming a thin web.

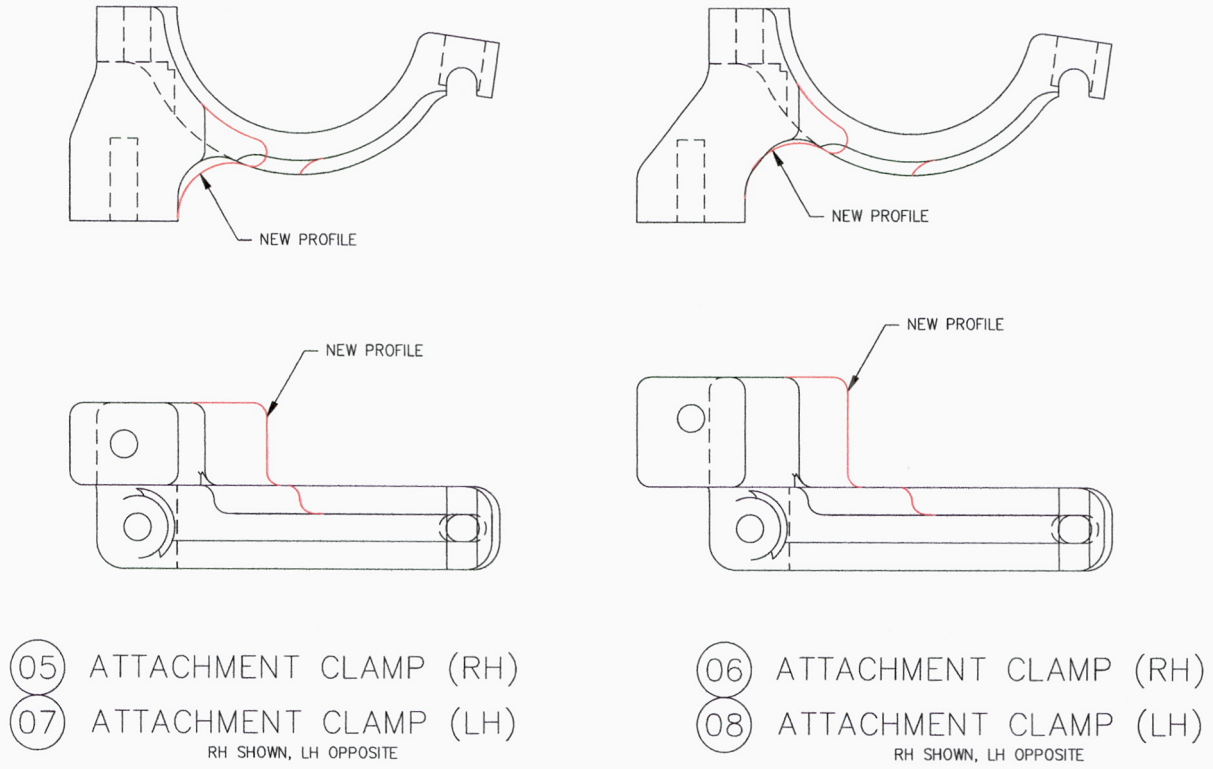

Figure 5.3 – Attachment Clamp – Modified Configuration

The original approved configuration of the cargo pod compatible clamps has been demonstrated to support the loads required. Strength of the modified clamps is increased over the existing approved configuration. Weight change is negligible. The part number will be identified as 78621-XXR2 to differentiate from earlier configurations.

5.2 Dissemination

There are approximately 60 Aero Design AS350/AS355 cargo pod compatible attachment provisions installations in the field. Instructions for Continued Airworthiness ICA764.90 specifies the clamps are to be visually inspected every 300 hrs or annually for cracks, corrosion, or other damage. There have been no other reported instances of cracking of this part. Given the safety implications of losing a basket in flight, it is prudent to inform all current operators using this attachment provision configuration of the updated parts. Service bulletin SB786.01 is issued to instruct operators to perform a one time inspection of the affected parts and if cracks are found to replace the original parts with updated parts. If cracks are not found the parts may continue to be inspected in accordance with the ICA schedule and replaced if cracks are found on a subsequent inspection.

6.0 ADDITIONAL CHANGES

The following additional minor changes have been made to the mounting provisions fabrication drawings noted:

1. 78621 Revision 2: Corrected the part description for RH and LH in the bill of materials as it did not match the drawing labels.
2. 78620 Revision 5 and 78621 Revision 2: The part number (both drawing) and installed position (78621 only) is engraved on the parts as shown. This practice was initiated by E. Burgoin, DAR 290M, in 2011 but was not reflected on the drawing at that time.
3. 78620 Revision 5 and 78621 Revision 2: The alternate anodizing finish is changed from MIL-A-8625F, Type III to Type II. Type III is an engineered hardcoat intended for improved wear resistance on sliding surfaces, which is not required in this application. Type II is the correct coating for this application as a corrosion preventative coating.
4. 78620 Revision 5: The depth of the slot for the T-bolt is increased from 0.40" to 0.45". This is consistent with other Aero Design parts using this T-bolt arrangement.

BOOKMARKS COVER PAGE

CP-SH08-16-R1-06Sep2016_Minor.Change.Pkg...pdf

WINGS ENGINEERING LIMITED

Jeff Clarke, Vice President
Aero Design Ltd.
9888A Malaspina Road
Powell River, BC, V8A 0G3
Tel: 604.483.2376
jeff@aerodesign.ca

6 September 2016

Cc: Michael.Chan@tc.gc.ca, OPI, Aircraft Certification, Vancouver Regional Office, TCCA

Field Service Improvements to External Attachment Provisions wrt STC SH08-16 Issue 5, Installation of External Attachment Provisions and Cargo Basket Qualification of Minor Design Changes & Service Bulletin iaw CP-SH08-16-R1-06Sep2016
(Transmittal Letter; TL1607-NC-06Sep2016 with original copes noted below)

Dear Mr. Clarke,

Wings Engineering has supported Aero Design's CAR 521 Division VIII responsibilities for the minor changes to SH08-16 for the field service improvements.

Included with this letter are the documents bearing the original Transport Canada signatures:

DCL786-1, Rev 5, 06 Sep 2016 Configuration - A, External Attachment Provisions

DCL786-3, Rev 5, 06 Sep 2016 Attachment Provisions Assembly

An electronic copy of CP-SH08-16-R1-06Sep2016 has also been provided. This file is complete with the WPN1607 application, compliance and certificate data noted in CP Part A – Certification Record – Master Technical Document List (MTDL).

The transfer of this approval in the name of another person requires the prior approval from the Minister in accordance with section 521.357 of the Canadian Aviation Regulations (CAR).

Embodiment of modifications requiring certification of detail part fabrication and installation, in accordance with approved data identified on the certificate, is considered to be a maintenance activity and the requirements of subsection 571.06(4) of the CARs will apply.

A Canadian Holder is required to fulfill the responsibilities of a Design Approval Document Holder in accordance with Division VIII of subpart 521 of the CAR, including the reporting of any service difficulties experienced with their product. Therefore, should you become aware of any defect, malfunction or failure resulting from the design change, it is your responsibility to submit a Service Difficulty Report to Transport Canada.

Thank you for the work.

Yours truly,

James Tinson PEng, FEC, DAR
President – Wings Engineering Limited

Certification Plan - Record Cover Page

General Information for MTDL Revision 1 – 06 September 2016 for STC SH08-16

Approval Scope:	Minor changes with no change to certificate
DAR 304 /D Approval [Yes/No]:	No
Wings Engineering Limited Project No., Date:	WPN1607, 11 Aug 2016
Regional NAPA Project No., Date:	Not required for minor changes.
Prospective Holder (wrt new approvals):	NA
Approval Holder (wrt Post Certification Activities)	Aero Design Ltd.
Project Title:	Field Service Improvements to External Attachment Provisions per Aero Design Engineering Report ER786.01-R0-06Sep2016.
Project Description:	Qualification of Minor Design Changes & Service Bulletin.
Aircraft Mfg/Models:	Airbus Helicopters Models AS350B, B1, B2, B3, BA & D AS355E, F, F1, F2, N & NP
Approval No., Issue, Date:	SH08-16, Issue 5, Approved; 11 Apr 2008, Issued; 08 Sep 2014
Approval Description:	Installation of External Attachment Provisions and Cargo Basket

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Effective Page List

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☑ Project and all documents are logged-out by DAR 304.

Delegate: _____ **Date;** 06 SEP 2016

James Tinson, DAR (General, Powerplant and Structures)
Wings Engineering Limited

CP Record Revision History and Notes

CP940.90-0-04Apr2016, MTDL Revision 0 for initial issue iaw WPN1604.

- Regional Project number P-16-0103, Wings Project No WPN1604
- Original Issue for One-Off Cargo Basket modified with Survey Equipment Provisions
- Cover page and MTDL for Aero Design CP940.90, Revision 0, Dated 04 April 2016.
- MTDL revision numbering 0, 1, 2, ... to suit Aero Design's revision numbering system.
- This MTDL is for compliance with DAR 304's EPM Section *2.4.2 Major Changes with or without Update/s to the Approval Certificate iaw Section 521.207*.
- No changes to installation, ICA or to the FMS therefore these documents are not included in this MTDL.

CP-SH08-16-R1-06Sep2016, MTDL Revision 1 iaw WPN1607

- CP renumbered with STC number.
- Field Service Improvements to External Attachment Provisions per Aero Design Engineering Report ER786.01-R0-06Sep2016 for the Qualification of Minor Design Changes & Service Bulletin.
- This MTDL now captures all of the documents sited on the STC approval certificate in order to meet configuration control and record keeping requirements.
    - Aero Design has confirmed that these sited documents are at the current applicable revision level wrt "or later TCCA approved or accepted revision".
- This MTDL is in compliance with DAR 304's EPM Section *2.4.1 Minor Changes iaw Section 521.154* wrt the qualification of minor design changes for the field service improvements to the External Attachment Provisions per Aero Design DCL786-1-R5-06Sep2016 and all DCL/s and other documents controlled by DCL786-1.
- The ICA was also updated to capture the new parts introduced per the updated assembly drawing/s listed in DCL786-1-R5-06Sep2016.
    - The minor ICA Revision 7 part number type changes are accepted by DAR.
    - No changes to the existing TCCA-PNR accepted ICA format, content or change acceptance per ICA Sub-Chapter 0-3 Distribution:

        Any changes will be sent to Transport Canada. All changes will be recorded in the Record of Revisions page at the front of this document.

Part A – Certification Record – Master Technical Document List (MTDL)

Line Ref No.	CP Rev	Report, Drawing, Instructions, FMS, ICA, ECO or Other	Rev	Rev Date	Title/Description, Information, Other	Approval Reference, Notes, Other	Distribution List O = Original, C = Copy		
							DAR	TCCA	Holder
		CP940.90-0-04Apr2016, MTDL Revision 0 for initial issue iaw WPN1604.							
1		**Application Package WPN1604**							
2	0	NDWL.Project_P-16-0103	NA	21 Mar 2016	Online project application Project description included noted	Application requirement 1 of 5 Application requirement 2 of 5	O	C	C
3	0	CP940.90	0	04 Apr 2016	Certification Plan with updates & changes wrt original STC CP Accepted by DAR 304 CPR-DR applicable to original CP	As discussed with Jorge Canal (OPI) For application requirements: 3 – Proposed BoC & 4 – Proposed Cert Plan Application requirement 5 of 5	See Conformity Package Below		
4									
5		**Compliance Package WPN1604**	"Deltas" for one-off changes. i.e.; See DCL940-3 for the original compliance document list that includes the signed undertaking letter.						
6	0	DOC940.90	0	04 Apr 2016	Declaration of Conformity	By Aero Design	O	C	C
7	0	SOC940.90	0	04 Apr 2016	Statement of Compliance	By DAR 304 for CP940.90	O	C	C
8	0	CP940.90	0	04 Apr 2016	Certification Plan/Record	Updated rqmt's FOCs initialed by DAR 304	O	C	C
9	0	ER940.90	0	31 Mar 2016	Engineering Report	Changes to Basket & Lid Complete with original load test rqmnts.	O	C	C
10	0	TR940.90	0	30 Mar 2016	Load Test Plan & Report	With Basket & Lid drawings, CIR, calibration certs & test photo record.	O	C	C
11									
12		**Certificate Package WPN1604**							
13	0	SH08-16	Iss 5	08 Sep 2014	Supplemental Type Certificate	NO CHANGE. Included for reference only.	C	C	O
14	0	TL1604	NC	04 Apr 2016	Transmittal Letter, Wings to AD	Original compliance & certificate copies	C	C	O
15	0	DCL940-1	2	04 Apr 2016	Document Control List EL Basket Installation - Config F	Stamped by DAR 304 WRT the DCL revision 2 items only.	C	C	O
16	0	DCL940-3 controlled by DCL940-1	2	04 Apr 2016	Document Control List EL Basket Assembly Dwgs & Design Compliance Documents	Stamped by DAR 304 WRT the DCL revision 2 items only. (Some document overlap wrt this MDTL.)	C	C	O
17	0	SI 940.91 controlled by DCL940-3	0	04 Apr 2016	Service Instruction Loading, W-B Info & Supplementary Placard	Stamped by DAR 304 Configuration Control via DCL940-3	C	C	O
18									
19									

Line Ref No.	CP Rev	Report, Drawing, Instructions, FMS, ICA, ECO or Other	Rev	Rev Date	Title/Description, Information, Other	Approval Reference, Notes, Other	Distribution List O = Original, C = Copy		
							DAR	TCCA	Holder
		CP-SH08-16-R1-06Sep2016, MTDL Revision 1 iaw WPN1607							
20	1	**Application Package WPN1607**							
21	1	None			Statement	Not required for minor changes	NA	NA	NA
22									
23	1	**Compliance Package WPN1607**							
24	1	SOC1607	NC	06 Sept 2016	Statement of Compliance	By DAR 304 for ER786.01 and updates to certificate package documents noted per the SOC & below as CP Rev 1.	O	C	C
25	1	ER786.01	0	06 Sept 2016	Engineering Report	Qualification of Minor Changes.	C	C	O
26	1	SU940	1	01 Aug 2014	Signed Undertaking	Included for completeness. Listed per DCL786-3-R5			
27									
28	1	**Certificate Package WPN1607**	TL & all documents sited per SH08-16 Issue 5. Pre-MTDL Rev 0 documents are noted as CP Rev "Pre" and reference the current Rev/Date						
29	1	SH08-16	Iss 5	08 Sep 2014	Supplemental Type Certificate	NO CHANGE. Included for reference only.	C	C	O
30	1	TL1607	NC	06 Sept 2016	Transmittal Letter, Wings to AD	Complete with original certificate docs noted.	C	C	O
31	1	DCL786-1	5	06 Sept 2016	Configuration A	External Attachment Provisions Stamped by DAR 304	C	C	O
32	1	DCL786-3	5	06 Sept 2016	DCL for Attachment Provisions Not sited on the STC	Controlled by DCL786-1 DCL786-3 stamped by DAR 304	C	C	O
33	Pre	DCL776-1	4	17 July 2014	Configuration B	External Cargo Basket (Short Basket)	C	C	O
34	Pre	Removed from STC	- -	- - -	Configuration C	External Cargo Basket (Short Basket -Altn)	NA	NA	O
35	Pre	DCL764-1	4	17 July 2014	Configuration D	External Cargo Basket (Medium Basket)	C	C	O
36	Pre	DCL784-1	4	17 July 2014	Configuration E	External Cargo Basket (Long Basket)	C	C	O
37	0	DCL940-1	2	04 Apr 2016	Configuration F (See WPN1604)	External Cargo Basket (Long Basket - Altn)	C	C	O
38	Pre	DCL704	9	17 July 2014	Cargo Basket Modifications	See eligibility limitations noted on dwg.	C	C	O
39	Pre	FMS764.91	4	16 July 2014	Flight Manual Supplement	With limitations as noted.	C	C	O
40	1	ICA764.90	7	06 Sept 2016	Instructions for Continued Airworthiness	Minor part number changes accepted by DAR 304 per DCL786-1-R5	C	C	O
41									
42									

Part E – Post Certification – Minor Design Change Classification Decision Record

Approval No., Issue, Date: SH08-16, Issue 5, Approved; 11 Apr 2008, Issued; 08 Sep 2014

Title/Description of Design Change: Field Service Improvements to External Attachment Provisions
Qualification of Minor Design Changes & Service Bulletin

Change Document No.: Aero Design DCL786-1 Rev/Date: 5 / 06 September 2016

Application Notes:

For each item listed it shall be determined whether the change to be accomplished could have other than a negligible effect on; weight and centre-of-gravity limits, structural strength, performance, power plant operation, flight characteristics or other qualities affecting its airworthiness or environmental characteristics.

The following questions are answered with either a YES or NO response.

A YES answer to any individual question indicates that the design change shall be classified major.

Criteria per CAR Standard 571, Appendix A, 2002/06/01	Initial for NO
(a) Operating Limitations	
(1) Does the modification or repair involve a revision in the operating limitations specified in the approved type design?	
(b) Structural Strength ***Information Note:*** *The questions contained in this paragraph shall be applied to alterations of an airframe, engine, propeller, or component.* Does the modification or repair alter:	
(1) a principal component of the aircraft structure such as a frame, stringer, rib, spar, skin or rotor blade?	
(2) a life-limited part or a structural element that is subject to a damage tolerance assessment or fail-safe evaluation?	
(3) the strength or structural stiffness of a pressure vessel?	
(4) the mass distribution in a structural element? ***Information Note:*** *This might involve the installation of an item of mass that would necessitate a structural re-evaluation.*	
(5) a containment or restraint system intended for occupants or the storage of items of mass (e.g. cargo)?	
(6) the structure of seats, harnesses, or their means of attachment?	
(c) Powerplant Operation Does the modification or repair:	
(1) affect the power output or control qualities of the powerplant, engine, propeller, or their accessories?	
(2) alter the approved operating limitations?	
(d) Performance and Flight Characteristics Does the modification or repair involve alterations that:	
(1) significantly increase drag or exceed aerodynamic smoothness limits?	
(2) significantly alter thrust or power output?	
(3) affect stability or controllability?	
(4) induce flutter or vibration?	
(5) affect the stall characteristics?	

Criteria per CAR Standard 571, Appendix A, 2002/06/01 continued	Initial for NO
(e) Other Qualities Affecting Airworthiness Does the modification or repair:	
(1) change the information on, or the location of, a placard required by the type design or an Airworthiness Directive?	
(2) alter any information contained in the approved section of the aircraft flight manual or equivalent publication?	
(3) affect the flight-crew's visibility or their ability to control the aircraft?	
(4) affect egress from the aircraft?	
(5) reduce the storage capacity of an oxygen system, or alter the oxygen rate of flow?	
(6) affect flight controls or an autopilot?	
(7) alter an electrical generation device, or the electrical distribution system between the generating source and either its primary distribution bus, or any other bus designated as an essential bus? ***Information Note:*** *The electrical distribution system includes its associated control devices, and all its protection devices.*	
(8) reduce the storage capacity of the primary battery?	
(9) affect a communication system required by the approved type design?	
(10) affect instruments, or indicators that are installed as part of a system required by the approved type design?	
(f) Other Qualities Affecting Environmental Characteristics	
(1) Does the modification or repair increase aircraft noise levels or emissions?	

Criteria per AC 521-004, Issue 01, 5.6 (2) (b) (iv)	Initial for NO
(g) Consideration for the cumulative effect of minor changes. Review the Part A Master Technical Document List, the applicable MDL, installation instructions, fabrication drawings, ECOs, etc and list the reviewed documents below: Doc No. / Rev/Date / Title/Other ER786.01 / 0 /06Sep2016 / Qualification of Minor Changes & Service Bulletin	
(1) Is the cumulative effect of this design change major?	

The design change noted has been evaluated per criteria a thru g and in accordance with approved EPM procedures and has been classified as "Minor".

By: _____ Date: 06 September 2016
James Tinson DAR No. 304

Transport Canada / Transports Canada

MINISTERIAL DELEGATE STATEMENT OF COMPLIANCE WITH THE CERTIFICATION BASIS

1. Reference No.	2. Applicant Name
NAPA File; N/A Wings Engineering Project No.; WPN1607	Wings Engineering Ltd. and agent for holder: Aero Design Ltd. 9888A Malaspina Road, Powell River, BC, V8A 0G3 Tel: 604.483.2376 www.aerodesign.ca

Part 1: Identification of Aeronautical Product

3. Applicable Design Approval Document No.

STC; SH08-16, Issue; 5, Approved; 11 April 2008, Issued; 8 September 2014
Installation of External Attachment Provisions and Cargo Basket

4. Model No.	5. Make
AS350B, B1, B2, B3, BA & D AS355E, F, F1, F2, N & NP	Airbus Helicopters (State of design: France)

6. Type (aircraft, engine, propeller, appliance, part)

Helicopter

Part 2: Substantiating Reports and Data

7. Number	8. Title
CP-SH08-16-R1-06Sep2016, Part A	Master Technical Document List (MTDL) c/w current Rev/Date status for all documents sited on the STC.
CP-SH08-16-R1-06Sep2016, Part E	Post Certification - Minor Change Decision Record
DCL786-1-R5-06Sep2016	Configuration A - External Attachment Provisions
ICA-764.90-R7-06Sep2016	Instructions for Continued Airworthiness
78603-R2-06Sep2016	Attachment Provisions Installation
SB786.01-R0-06Sep2016	Service Bulletin, Clamps, One-Time Inspection
DCL786-3-R5-06Sep2016	DCL for Attachment Provisions Assembly
78620-R5-06Sep2016	Clamp Fabrication
78622-R0-06Sep2016	Cargo Pod Compatible Clamp Fabrication
78635-R0-06Sep2016	Forward Beam Fabrication
CP-SH08-16-R1-06Sep2016	The Revision 1 CP noted above.
ER786.01-R0-06Sep2016	Engineering Report for Qualification of Minor Changes & Service Bulletin
SU940-R1-01Aug2014	Signed Undertaking, Added for completeness

9. Purpose of Finding of Compliance

Qualification of minor design changes and service bulletin for the field service improvements to Configuration A – External Provisions iaw DCL781-1, Revision 5, 06 September 2016.

10. Applicable Elements of Certification Basis

Minor changes to two offset attachment clamps and the fwd attachment beam drawings drive updates to other documents controlled by the DCL (Drawing Control List) configuration control document noted above.

This SoC has been generated iaw the DAR's Configuration Control procedures wrt use of approval stamp for the DCL/s noted in Blocks 7/8.

Part 3: Ministerial Delegate Finding of Compliance with the Certification Basis

Under the authority vested in me by the Minister under subsection 4.3(1) of the Aeronautics Act, I hereby find that the type design of the aeronautical product is in compliance with the certification basis as demonstrated by the applicant's substantiating reports and data to the best of my knowledge.

11. Signature of Delegate	12. Name	13. Delegate No.	14. Date (yyyy-mm-dd)
James Tinson	James Tinson	304	2016-09-06

Transport Canada Transports Canada

MINISTERIAL DELEGATE STATEMENT OF COMPLIANCE WITH THE CERTIFICATION BASIS

INSTRUCTIONS FOR COMPLETION OF THE FORM MINISTERIAL DELEGATE FINDING OF COMPLIANCE WITH THE CERTIFICATION BASIS

Block 1 - Enter a number unique to the originator or applicant for the type design approval to which the finding of compliance pertains. In the case where a new or amended design approval document will be issued, the number should be either the NAPA project number. In the case where a NAPA project number is not generated the reference number should be one generated and controlled by the applicant.

Block 2 - Enter the name of the applicant who applied for the type design approval.

Block 3 - In the case of findings of compliance for the initial type design approval of an aeronautical product this block would be left blank or as an example, add the Certification Plan report number. Otherwise enter the number of the applicable design approval document type affected. Typically this will refer to the type certificate or Canadian Technical Standard Order (CAN-TSO) design approval against which the requested type design approval would apply. "Model series XX" is not acceptable.

Block 4 - Enter each model as listed on the type certificate data sheet for the affected aeronautical product. In the case of a new aeronautical product, print or type the model to be listed on the TCDS for the aeronautical product.

Block 5 - Enter either the model series or the specific model number, as appropriate and as listed on the type certificate data sheet for the aeronautical product. If the requested type design approval is applicable to multiple models, list them separately. If the type design approval is for an appliance, part or component, separate from a type certification project, enter the model number of the appliance, part or component.

Block 6 - Enter the type of aeronautical product as listed on the product's data sheet, or describe the appliance, part or component.

Block 7 - Enter the number and revision level of the reports, drawings, analysis and documents.

Block 8 - Enter the titles of all the applicable reports, drawings, analysis, or documents in this block. If there is not enough space additional pages may be attached. The delegate or authorized person must reference all reports and data that is generated in support of the requested type design approval: drawing numbers with change letters, report numbers with revision levels dates, and so forth. If the particular finding of compliance form does not cover all applicable elements, enter an explanatory statement, for example: "This finding of compliance is for the above engineering design data only." It indicates the data listed above demonstrates conformity of the type design of the aeronautical product only with those requirements specified by paragraph and subparagraph listed below as "applicable elements of the certification basis".

Block 9 - Enter the type of project (ie, type certificate, Canadian Technical Standard Order (CAN-TSO) design approval, supplemental type certificate, etc) and the number of the design approval document that is to be issued, if known. Provide a brief description of the purpose for the requested type design approval and to what the specific findings of compliance apply. If this finding of compliance pertains to a revision of a manual, such as the aircraft flight manual, which will not require reissue of the corresponding design approval document as specified in block 3, then block 9 should have a statement that the design approval document specified in block 3 does not require reissue. This finding of compliance is for records purpose only.

Block 10 - Enter the applicable elements of the certification basis at the section, subsection, paragraph, or other level as appropriate. This list is to include the applicable amendment levels. If the list is too long, attach additional sheets or refer to appropriate compliance documentation such as a Certification Plan if applicable. It is not sufficient for the delegate, or authorized person within an organizational delegate, to merely indicate "structural regulations" or to use other generalizations.

Block 11 - The delegate, or authorized person within an organizational delegate, signs in this block.

Block 12 - Enter the name of the delegate, or authorized person within an organizational delegate, in this block.

Block 13 - Enter the delegation number of the delegate, or authorized person within an organizational delegate, in this block. In the case of an authorized person, enter the authorized person's number followed by the number of the organizational delegate.

Block 14 - Enter the date the delegate, or authorized person within an organizational delegate, signs the form after making the finding(s) that the listed substantiating reports and data demonstrated that the type design of the aeronautical product conformed to the applicable certification basis.

General - Each Design Approval Organization or Approved Engineering Organization can choose to create their own Finding of Compliance form provided it satisfies the intent as shown on the current form.

DOCUMENT CONTROL LIST

(Listing of Current Approved and Accepted Documents)

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
APPROVAL DOCUMENT/S				
4	SH08-16	5	08/09/2014	TCCA STC Approval, approval date 11/04/2008
4	SR02680NY	1	06/08/2012	FAA STC Approval, approval date 25/02/2009
DOCUMENTS SITED ON THE APPROVAL DOCUMENT/S				
5	ICA764.90	7	06/09/2016	Instructions for Continued Airworthiness
INSTALLATION & INSTALLATION SUPPORT DOCUMENTS				
4	78602	1	14/07/2014	Attachment Provisions Installation
5	78603	2	06/09/2016	Cargo Pod Compatible Attachment Provisions Installation
5	SB786.01	0	06/09/2016	Service Bulletin Cargo Pod Compatible Clamps, One-Time Inspection
FABRICATION AND OTHER DOCUMENTS				
5	DCL786-3	5	06/09/2016	Document Control List for Attachment Provisions Assembly

DCL REVISION CONTROL

DCL REV.	DCL REV. DATE	REVISION BY	APPROVED BY	DESCRIPTION
0	06/03/2008	R. Rathwell	TCCA - PNR	Original.
1	05/03/2009	R. Rathwell	DAR 290M	Installation drawing and fabrication DCL updated.
2	01/02/2010	J. Clarke	TCCA - PNR	Documents updated for mid height configuration.
3	16/06/2010	J. Clarke	TCCA - PNR	Documents updated for light wall configuration.
4	17/07/2014	J. Clarke	TCCA - PNR	Documents updated for new address.
5	06/09/2016	J. Clarke	DAR 304	DCL format updated. DCL786-3, ICA764.90 and 78603 updated, SB786.01 added for replacement parts.

APPROVAL:
(Minor ICA PN changes are accepted.)

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION BRANCH
06 SEP 2016
APPROVED
BY: [signature] DAR 304
CERT. NO.: SH08-16
ISSUE NO.: 5

Aero Design Ltd.
9888A Malaspina Road
Powell River, BC, Canada, V8A 0G3
Tel: 604.483.2376 www.aerodesign.ca

Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket Attachment Provisions Installation (Configuration A)

Document Control List Number	Revision	Sheet
DCL786-1	**5**	**1 of 1**

DOCUMENT CONTROL LIST

(The Current Approval/Configuration Control List for Fabricated Parts, Assemblies and Other Documents and a Complete Listing of the Applicable Design Compliance Documents)

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
FABRICATION AND ASSEMBLY DOCUMENTS				
5	78620	5	02/08/2016	Clamp Fabrication
4	78621	1	14/07/2014	Cargo Pod Compatible Clamp Fabrication (Replaced By: 78622)
5	78622	0	06/09/2016	Cargo Pod Compatible Clamp Fabrication
4	78633	1	14/07/2014	Aft Beam Fabrication
4	78634	1	14/07/2014	Forward Beam Fabrication (Replaced By: 78635)
5	78635	0	06/09/2016	Forward Beam Fabrication

DCL REVISION CONTROL				
DCL REV.	DCL REV. DATE	REVISION BY	APPROVED BY	DESCRIPTION
0	06/03/2008	R. Rathwell	TCCA - PNR	Original.
1	05/03/2009	R. Rathwell	DAR 290M	High mounting beam drawing updated.
2	01/02/2010	J. Clarke	TCCA - PNR	Clamp changed to T-bolt configuration; mid height beam added, light wall beam configurations added.
3	16/06/2010	J. Clarke	TCCA - PNR	Cargo pod compatible configuration added; beam configurations replaced with new.
4	17/07/2014	J. Clarke	TCCA - PNR	Documents updated for new address.
5	06/09/2016	J. Clarke	DAR 304	DCL format updated. Changes to cargo pod clamps and forward beam

APPROVAL:

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH
06 SEP 2016
APPROVED
BY: [signature] DAR 304
CERT. NO.: SH08-16
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Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Attachment Provisions Assembly

Document Control List Number	Revision	Sheet
DCL786-3	**5**	**1 of 2**

DOCUMENT CONTROL LIST

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
DESIGN COMPLIANCE DOCUMENTS				
5	CP-SH08-16	1	06/09/2016	Certification Plan-Record for Minor Design Changes
0	ER764.01	0	29/02/2008	Engineering Report
2	ER764.04	0	22/01/2010	Engineering Report
3	ER764.05	0	16/06/2010	Engineering Report
5	ER786.01	0	06/09/2016	Engineering Report, Qualification of Minor Changes
0	FTP764.03	0	26/02/2008	Flight Test Plan and Report
5	SU940	1	01/08/2014	Signed Undertaking iaw CAR 521 Division VIII
0	TR764.02	0	29/02/2008	Load Test Plan and Report

SAR POINT MODIFICATION

940.90

WINGS ENGINEERING LIMITED

Jeff Clarke, Vice President
Aero Design Ltd.
9888A Malaspina Road
Powell River, BC, V8A 0G3
Tel: 604.483.2376
jeff@aerodesign.ca

4 April 2016

Cc: Jorge.Canal@tc.gc.ca, OPI, Aircraft Certification, Vancouver Regional Office, TCCA

One-off Custom Cargo Basket Assembly PN 94010, SN 94001-57
Compliance Package for SH08-16 updated per Aero Design CP940.90-0-04Apr2016
Transmittal Letter; TN1604-NC-04Apr2016 with original copes noted below

Dear Mr. Clarke,

Wings Engineering has supported Aero Design's CAR 521 Division VIII responsibilities for the approved changes to SH08-16 for the one-off custom cargo basket noted.

Included with this letter are the documents bearing the original Transport Canada signatures:

DCL940-1, Rev 2, 04 Apr 2016	Document Control List, EL Basket Installation - Config F
DCL940-3, Rev 2, 04 Apr 2016	Document Control List, EL Basket Assembly Dwgs & Design Compliance Documents
SI 940.91, Rev 0, 04 Apr 2016	Service Instruction (Cover page only)

In addition to the above originals a full electronic file for all the documents noted per Master Technical Document List MTLD-CP940.90-0-04Apr2016 has also been supplied.

The transfer of this approval in the name of another person requires the prior approval from the Minister in accordance with section 521.357 of the Canadian Aviation Regulations (CAR).

Embodiment of modifications requiring certification of detail part fabrication and installation, in accordance with approved data identified on the certificate, is considered to be a maintenance activity and the requirements of subsection 571.06(4) of the CARs will apply.

A Canadian Holder is required to fulfill the responsibilities of a Design Approval Document Holder in accordance with Division VIII of subpart 521 of the CAR, including the reporting of any service difficulties experienced with their product. Therefore, should you become aware of any defect, malfunction or failure resulting from the design change, it is your responsibility to submit a Service Difficulty Report to Transport Canada.

Thank you for the work.

Yours truly,

James Tinson PEng, FEC, DAR
President – Wings Engineering Limited

DOCUMENT CONTROL LIST

(Listing of Current Approved and Accepted Documents)

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
APPROVAL DOCUMENT				
1	SH08-16	5	08/09/2014	TCCA STC Approval, approval date 11/04/2008
0	SR02680NY	0	06/08/2012	FAA STC Approval, approval date 25/02/2009
DOCUMENTS SITED ON THE APPROVAL DOCUMENT				
1	94001	1	08/07/2014	Quick Release Cargo Basket Installation
1	ICA764.90	6	15/07/2014	Instructions for Continued Airworthiness
1	FMS764.91	4	16/07/2014	Flight Manual Supplement
FABRICATION AND OTHER DOCUMENTS				
2	DCL940-3	2	04/04/2016	Document Control List for Quick Release Cargo Basket Assembly

DCL REVISION CONTROL				
DCL REV.	DCL REV. DATE	REVISION BY	APPROVED BY	DESCRIPTION
0	03/11/2011	Richard Rathwell	TCCA - PNR	Original – added to SH08-16 Issue 4
1	17/07/2014	Jeff Clarke	TCCA - PNR	Documents updated for new address.
2	04/04/2016	Jeff Clarke	DAR 304	DCL format updated. DCL940-3 updated.

APPROVAL:

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH

APR 0 4 2016
APPROVED
BY: DAR 304
CERT. NO.: SH08-16
ISSUE NO.: 5

Aero Design Ltd.
9888A Malaspina Road
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Tel: 604.483.2376 www.aerodesign.ca

Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Extra-Long Basket Installation (Configuration F)

Document Control List Number	Revision	Sheet
DCL940-1	2	1 of 1

DOCUMENT CONTROL LIST

(The Current Approval/Configuration Control List for Fabricated Parts, Assemblies and Other Documents and a Complete Listing of the Applicable Design Compliance Documents)

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
FABRICATION AND ASSEMBLY DOCUMENTS				
1	94010	1	10/07/2014	Cargo Basket Assembly
1	94011	1	11/07/2014	Basket Fabrication
1	94012	1	10/07/2014	Lid Fabrication
1	94023	1	11/07/2014	Attachment Hoop
1	94027	1	10/07/2014	Placard
1	94030	1	11/07/2014	Hoop
1	49215	1	13/03/2014	Spacer
1	49216	1	13/03/2014	Spacer
1	84240	0	21/05/2014	Lid Brace Installation
1	84255	2	13/03/2014	Handle Assembly
1	84261	2	13/03/2014	Handle Bar Assembly
1	84262	2	14/02/2014	Basket Handle Provisions Assembly
1	84263	0	14/02/2014	Lid Handle Provisions Assembly
1	84265	2	13/03/2014	Handle Lever
1	84267	1	13/03/2014	Handle Bracket
1	84272	1	13/03/2014	Bushing

DCL REVISION CONTROL				
DCL REV.	**DCL REV. DATE**	**REVISION BY**	**APPROVED BY**	**DESCRIPTION**
0	03/11/2011	Richard Rathwell	TCCA - PNR	Original
1	17/07/2014	Jeff Clarke	TCCA - PNR	Update to new address. Minor changes to fabrication drawings.
2	04/04/2016	Jeff Clarke	DAR 304	DCL format updated. One-off custom basket assembly added

APPROVAL:

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH
APR 0 4 2016
APPROVED
BY: DAR 304
CERT. NO.: SH08-16
ISSUE NO.: 5

Aero Design Ltd.
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Airbus Helicopters (Eurocopter)
AS350 & AS355 Series
Quick Release Cargo Basket
Extra-Long Basket Assembly

Document Control List Number	Revision	Sheet
DCL940-3	**2**	**1 of 2**

DOCUMENT CONTROL LIST

DCL REV.	DOCUMENT NO.	DOC REV.	DOC REV. DATE	DOCUMENT CONTENT
FABRICATION AND ASSEMBLY DOCUMENTS (CONTINUED)				
1	36273	2	18/02/2014	Lid Bracket
1	36274	3	13/03/2014	Bushing
1	36275	4	04/10/2013	Bushing
1	36277	1	13/03/2014	Handle Bar
1	36278	3	13/03/2014	Spring
1	36280	3	13/03/2014	Lid Brace Assembly
ONE-OFF CUSTOM BASKET ASSEMBLY - S/N 94001-57				
2	94091	0	04/02/2016	Basket Modification
2	94092	0	04/02/2016	Lid Modification
2	SI940.91	0	04/04/2016	Service Instructions
DESIGN COMPLIANCE DOCUMENTS				
1	CP940	1	05/07/2014	Certification Plan
2	CP940.90	0	04/04/2016	Certification Plan – One-off Custom Basket
1	DOC940	1	01/08/2014	Declaration of Conformity
2	DOC940.90	1	04/04/2016	Declaration of Conformity – One-off Custom Basket
0	ER940.01	0	20/11/2011	Engineering Report
0	ER842.01	0	14/10/2011	Engineering Report
0	FTP940.03	0	20/10/2011	Flight Test Plan
0	FTR940.03	1	3/11/2011	Flight Test Report
2	ER940.90	0	31/03/2016	Engineering Report– One-off Custom Basket
0	None	N/A	1/11/2011	Flight Test Report – Transport Canada
0	SOC940	0	14/11/2011	Statement of Compliance
2	SOC940.90	0	04/04/2016	Statement of Compliance – One-off Custom Basket
1	SU940	1	01/08/2014	Signed Undertaking of CAR 521 Division VIII
2	TR940.91	0	30/03/2016	Load Test Plan and Report– One-off Custom Basket

Document Control List Number	Revision	Sheet
DCL940-3	2	2 of 2

SERVICE INSTRUCTION

SI 940.91

AIRBUS HELICOPTERS (EUROCOPTER)

AS350 & AS355 SERIES

QUICK RELEASE CARGO BASKET

MODEL 940, EXTRA-LONG BASKET ASSEMBLY

ONE-OFF CUSTOM BASKET ASSEMBLY

REINFORCED STRUCTURE WITH CUTOUTS AND COVERS

P/N 94010, S/N 94001-57

FOR PORTABLE SURVEY EQUIPMENT

STRUCTURAL PROVISIONS ONLY

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH
APR 0 4 2016
APPROVED
BY: James Fisher DAR 304
CERT. NO.: SH08-16
ISSUE NO.: 5

Prepared by: Jeff Clarke, P.Tech. (Eng.)

Revision 0, 04 April 2016

Aero Design Ltd.

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Fax: 604-483-2372
www.aerodesign.ca

TABLE OF CONTENTS

1.0 INTRODUCTION

This one Model 94001 Extra-Long Cargo Basket Assembly has been reinforced in order to add cutouts and cover plates to facilitate the installation of portable survey equipment.

These instructions supplement the information contained in the required documents only to the extent noted.

2.0 REQUIRED DOCUMENTS

Aero Design Ltd. Cargo Basket Installation Drawing 94001, Revision 1

Aero Design Ltd. Instructions for Continued Airworthiness ICA764.90, Revision 6, for Airbus Helicopters AS350 and AS355 Series Helicopters, Basket Model 764, 776, 784, and 940

Aero Design Ltd. Flight Manual Supplement FMS764.91, Revision 4, for Airbus Helicopters AS350 and AS355 Series Helicopters, Basket Model 764, 776, 784, and 940

3.0 WEIGHT AND BALANCE

The additional weight for the reinforcing and covers is to be considered payload and these amounts are to be subtracted from the 300 lb maximum payload limit.

Item	Weight	Net Increase
S/N 94001-57 Modified Basket Assembly Includes Lid Walkway, Top Cover Plates (Fwd & Aft) & hdwr	72.5 lb	7.7 lb
Center Bottom Cover Plates (3 places) and hardware	2.7 lb each	8.1 lb
End Bottom Cover Plates (2 places) and hardware	2.9 lb each	5.8 lb
End Cover Plates (Fwd & Aft) and hardware	0.5 lb each	1.0 lb
Total		**22.6 lb**

The Lid's Top Cover Plates must be installed for egress safety purposes.

The allowable equipment payload for an empty S/N 94001-57 Basket Assembly with all Bottom and End Cover Plates installed:

= 300.0 - 22.6 = 277.4 lb

Updated W&B info for ICA 764.90 Table 25.1 is as follows:

Configuration	P/N	Standard Units				
		Weight	Longitudinal		Lateral	
		lb	Arm in	Moment in-lb	Arm in	Moment in-lb
Extra-Long Basket Installation *S/N 94001-57 with top covers						
Low	94001-01-01	72.5	136.0	9860.0	49.3	3574.3
Center Bottom Cover Plates	94091-05	2.7	117.4	317.0	49.3	133.1
	94091-05	2.7	136.0	367.2	49.3	133.1
	94091-05	2.7	154.6	417.4	49.3	133.1
End Bottom Cover Plates	94091-06	2.9	98.1	284.5	49.3	143.0
	94091-06	2.9	173.9	504.3	49.3	143.0
End Cover Plates	94091-07	0.5	88.3	44.2	49.3	24.7
	94091-07	0.5	183.8	91.9	49.3	24.7
High	94001-02-01	72.5	136.0	9860.0	48.6	3523.5
Center Bottom Cover Plates	94091-05	2.7	117.4	317.0	48.6	131.2
	94091-05	2.7	136.0	367.2	48.6	131.2
	94091-05	2.7	154.6	417.4	48.6	131.2
End Bottom Cover Plates	94091-06	2.9	98.1	284.5	48.6	140.9
	94091-06	2.9	173.9	504.3	48.6	140.9
End Cover Plates	94091-07	0.5	88.3	44.2	48.6	24.3
	94091-07	0.5	183.8	91.9	48.6	24.3
Cheek Pod Compatible	94001-03-01	72.5	136.0	9860.0	51.4	3726.5
Center Bottom Cover Plates	94091-05	2.7	117.4	317.0	51.4	138.8
	94091-05	2.7	136.0	367.2	51.4	138.8
	94091-05	2.7	154.6	417.4	51.4	138.8
End Bottom Cover Plates	94091-06	2.9	98.1	284.5	51.4	149.1
	94091-06	2.9	173.9	504.3	51.4	149.1
End Cover Plates	94091-07	0.5	88.3	44.2	51.4	25.7
	94091-07	0.5	183.8	91.9	51.4	25.7

Right side installations shown. Left side lateral arm is negative, installation P/N 94001-XX-02

Table 3.1 – Weight And Balance – Standard Units

Configuration	P/N	Metric Units				
		Weight	Longitudinal		Lateral	
		kg	Arm mm	Moment mm-kg	Arm mm	Moment mm-kg
Extra-Long Basket Installation *S/N 94001-57 with top covers						
Low	94001-01-01	32.8	3454.4	113323.1	1252.2	41079.6
Center Bottom Cover Plates	94091-05	1.2	2982.0	3643.1	1252.2	1529.9
	94091-05	1.2	3454.4	4220.3	1252.2	1529.9
	94091-05	1.2	3926.8	4797.5	1252.2	1529.9
End Bottom Cover Plates	94091-06	1.3	2491.7	3269.7	1252.2	1643.2
	94091-06	1.3	4417.1	5796.1	1252.2	1643.2
End Cover Plates	94091-07	0.2	2242.8	507.4	1252.2	283.3
	94091-07	0.2	4668.5	1056.2	1252.2	283.3
High	94001-02-01	32.8	3454.4	113323.1	1234.4	40496.3
Center Bottom Cover Plates	94091-05	1.2	2982.0	3643.1	1234.4	1508.1
	94091-05	1.2	3454.4	4220.3	1234.4	1508.1
	94091-05	1.2	3926.8	4797.5	1234.4	1508.1
End Bottom Cover Plates	94091-06	1.3	2491.7	3269.7	1234.4	1619.9
	94091-06	1.3	4417.1	5796.1	1234.4	1619.9
End Cover Plates	94091-07	0.2	2242.8	507.4	1234.4	279.3
	94091-07	0.2	4668.5	1056.2	1234.4	279.3
Cheek Pod Compatible	94001-03-01	32.8	3454.4	113323.1	1305.6	42829.5
Center Bottom Cover Plates	94091-05	1.2	2982.0	3643.1	1305.6	1595.0
	94091-05	1.2	3454.4	4220.3	1305.6	1595.0
	94091-05	1.2	3926.8	4797.5	1305.6	1595.0
End Bottom Cover Plates	94091-06	1.3	2491.7	3269.7	1305.6	1713.2
	94091-06	1.3	4417.1	5796.1	1305.6	1713.2
End Cover Plates	94091-07	0.2	2242.8	507.4	1305.6	295.4
	94091-07	0.2	4668.5	1056.2	1305.6	295.4

Right side installations shown. Left side lateral arm is negative, installation P/N 94001-XX-02

Table 3.2 – Weight And Balance – Metric Units

NOTES

The removal or installation of covers and/or equipment requires the location to be determined to calculate the corresponding centre of gravity and moment arm in order to complete the weight and balance calculations for the aircraft.

Cargo Basket operator must confirm all W & B information.

Equipment operation, ELA and EMC requirements are not addressed by this structural provisions only Service Instruction.

4.0 PLACARD

The following placard is installed adjacent to the standard placard in order to alert the operator to the information in this service instruction.

Figure 4.0.1 – Placard

5.0 COVER PLATES

Requirements for installation of cover plates:

- The Lid's Top Cover Plates must be installed for egress safety purposes.
- Cover plates or equipment mounting plates must be installed to cover all cutouts in the basket structure before flight, using all provided fastener locations in the basket structure.
- Fasteners shall be AN3 bolts or MS27039 #10 structural screws of appropriate length, with NAS1149F0363P or NAS1149F0332P washers, secured with MS21044N3 or MS21042-3 nuts.

6.0 EQUIPMENT MOUNTING PLATES

Requirements for equipment mounting plates:

- See above Cover Plate requirements.
- Equipment and mounting plates must not extend outside the structure of the basket.
- Structural installation of round or tear-drop shape, low profile, GPS or similar antenna on the Lid Cover Plate/s is acceptable. Maximum height 1 in (25 mm).
- Do not add any additional attachment holes to the Cargo Basket Assembly.
- Basket modifications, cover plates, equipment mounting plates, and equipment loads cannot exceed the 300 lb maximum permissible distributed load limitation.

  Basket load area = (11.5" wide x 96.5" long) / 144 sq. in / sq. ft = 7.71 sq. ft (0.7 sq. m)

  Sample equipment limit load calculations where all five bottom cover plates are replaced with a one piece 0.25" thick x 12" wide x 96" long 6061-T6 aluminum mounting plate (with no viewing cutouts weight = 28.2 lb)

  300 lb limit – 7.7 lb mods w/ top covers – 1.0 lb end covers – 28.2 lb mtg plate = 263.1 lb max cargo load

  263.1 lbs / 7.71 sq. ft = 34.1 lbs/sq. ft max distributed load
- See FAA AC 43.13-2B, Chapter 1. Structural Data for guidance with respect to the installation of the Portable Survey Equipment.

Certification Plan - Record Cover Page

General Information

Approval Scope:	Major change with no change to certificate
DAR 304 /D Approval [Yes/No]:	NA to STC
Wings Engineering Limited Project No., Date:	WPN1604, 21 Mar 2015
Regional NAPA Project No., Date:	P-16-0103, 21 Mar 2015
Prospective Holder (wrt new approvals):	NA
Approval Holder (wrt Post Certification Activities)	Aero Design Ltd.
Project Title:	One-off Custom Cargo Basket Assy PN 94010, SN 94001-57

Project Description: One basket was reinforced in order to add cutouts and cover plates to facilitate the installation of portable survey equipment.
An updated CP was prepared to address these changes and this one basket was tested to ultimate loads iaw the original CP requirements.
An SI was prepared to provide loading and W&B info for this one-off basket modification.

Aircraft Mfg/Models:	Airbus Helicopters Models AS350B, B1, B2, B3, BA & D AS355E, F, F1, F2, N & NP
Approval No., Issue, Date:	SH08-16, Issue 5, 08 Sep 2014

Table of Contents

MTDL Notes and History

Cover page and MTDL for Aero Design CP940.90, Revision 0, Dated 04 April 2016.

MTDL revision numbering 0, 1, 2, ... to suit Aero Design's revision numbering system.

This MTDL is for compliance with DAR 304's EPM Section *2.4.2 Major Changes with or without Update/s to the Approval Certificate iaw Section 521.207*.

No changes to installation, ICA or to the FMS therefore these documents are not included in this MTDL.

MTDL Revision 0, 04 April 2016

Effective Page List

Page	1	2										
Revision	0	0										

☐ Project and all documents are logged-out by DAR 304.

Delegate: _____ **Date;** _____
James Tinson, General, Powerplant and Structures

Part A – Certification Record – Master Technical Document List (MTDL)

Line Ref No.	CP Rev	Report, Drawing, Instructions, FMS, ICA, ECO or Other	Rev	Rev Date	Title/Description, Information, Other	Approval Reference, Notes, Other	Distribution List O = Original, C = Copy		
							DAR	TCCA	Holder
1		**Application Package**							
2	0	NDWL.Project_P-16-0103	NA	21 Mar 2016	Online project application Project description included noted	Application requirement 1 of 5 Application requirement 2 of 5	O	C	C
3	0	CP940.90	0	04 Apr 2016	Certification Plan with updates & changes wrt original STC CP Accepted by DAR 304 CPR-DR applicable to original CP	As discussed with Jorge Canal (OPI) For application requirements: 3 – Proposed BoC & 4 – Proposed Cert Plan Application requirement 5 of 5	See Conformity Package Below		
4									
5		**Compliance Package**	"Deltas" for one-off changes. i.e.; See DCL940-3 for the original compliance document list that includes the signed undertaking letter.						
6	0	DOC940.90	0	04 Apr 2016	Declaration of Conformity	By Aero Design	O	C	C
7	0	SOC940.90	0	04 Apr 2016	Statement of Compliance	By DAR 304 for CP940.90	O	C	C
8	0	CP940.90	0	04 Apr 2016	Certification Plan/Record	Updated rqmt's FOCs initialed by DAR 304	O	C	C
9	0	ER940.90	0	31 Mar 2016	Engineering Report	Changes to Basket & Lid Complete with original load test rqmnts.	O	C	C
10	0	TR940.90	0	30 Mar 2016	Load Test Plan & Report	With Basket & Lid drawings, CIR, calibration certs & test photo record.	O	C	C
11									
12		**Certificate Package**							
13	0	SH08-16	Iss 5	08 Sep 2014	Supplemental Type Certificate	NO CHANGE. Included for reference only.	C	C	O
14	0	TL1604	NC	04 Apr 2016	Transmittal Letter, Wings to AD	Original compliance & certificate copies	C	C	O
15	0	DCL940-1	2	04 Apr 2016	Document Control List EL Basket Installation - Config F	Stamped by DAR 304 WRT the DCL revision 2 items only.	C	C	O
16	0	DCL940-3	2	04 Apr 2016	Document Control List EL Basket Assembly Dwgs & Design Compliance Documents	Stamped by DAR 304 WRT the DCL revision 2 items only. (Some document overlap wrt this MDTL.)	C	C	O
17	0	SI 940.91	0	04 Apr 2016	Service Instruction Loading, W-B Info & Supplementary Placard	Stamped by DAR 304	C	C	O
18									
19									
20									

NDWL Project Detail Screen

Delegate: Jim Tinson

Region: PACIFIC

Primary OPI: HENRY WONG

Name and Address of Applicant

Applicant: Wings Engineering Limited
8731 Allison Street
Richmond, BRITISH COLUMBIA
CANADA
V6Y 3H9

Contact: Jim Tinson

Project Number: P-16-0103

Title: One-off Custom Basket

Project Type: Cdn STC

Certificate #: N / A

TC File #: N / A

Applicant Project #: WPN1604

Description of Type Design Change: *(Maximum 2000 Characters)*

One-off Custom Basket

(The Description will appear on the Certificate)

Specialist: HENRY WONG

CPR Number: N/A

Application Date: March 21 2016

Start Date: 2016/3/21

Completed Date: N / A

Project Status: Active

Approval Status: Pending
(Request for Approval)

Approval Date: N / A

Issued: No

Issue Number: 1

Issue Date: March 21 2016

Delegation: TC

Signatory: N / A

Name and Address of Holder

Holder: Aero Design Ltd.
9888A Malaspina Road
Powell River, BRITISH COLUMBIA
CANADA
V8A 0G3

Search | Clear | Applicant | Reset

Product Information

Add Products to Current Revision

Make	Model	Issue	

No Products Available

Edit Products | Reset Products

Remarks: *(Maximum 2000 Characters)*

Major change without changes to the approval certificate.
Re: SH08-16, Aero Design Ltd., AS350/355, Cargo Basket.

Status Overview: *(Maximum 2000 Characters)*

One-off Custom Basket.
Basket reinforced for cut-outs and covers to provide structural only provisions for survey equipment.

Various Options

- ☐ Outside Your Scope of Delegation
- ☐ Requesting TC Flight Test Involvement
- ☐ Will Parts be Manufactured for Sale
- ☐ Airworthiness Limitations

To remove a selected option after it has been saved, contact your OPI.

Required Documentation Selection / Uploading

- ☐ AE100
- ☐ Master Drawing or Top Drawing List
- ☐ Compliance Program
- ☐ FAA Submittal Request
- ☐ Maintenance/Repair Manual Supplement and ICA's
- ☐ Substantiation Reports
- ☐ Design Drawings
- ☐ Manufacture Drawings and Installations Instructions
- ☐ Flight Test Data
- ☐ Electrical Load and Analyses
- ☐ Flight Manual Supplement
- ☐ Scanned Signed Certificate
- ☐ Changed Product Rule Decision Record
- ☐ Weight and Moment Change Data

Aero Design Ltd.

9888A Malaspina Road
Powell River, BC, V8A 0G3
Phone: 604-483-2376
Fax: 604-483-2372
www.aerodesign.ca

DECLARATION OF CONFORMITY WITH THE CERTIFICATION BASIS

In accordance with Canadian Aviation Regulations Subpart 521, I hereby declare that the design of the External Attachment Provisions and Cargo Basket Installation, as detailed in the data approved by Transport Canada on approval SH08-16, Issue 5, has been demonstrated to conform to the best of my knowledge to the basis of certification established by the Minister for that approval in file P-16-0103.

Aero Design Ltd.

per: _____
Signature

Jeff Clarke	Vice President	04 April 2016
Print Name	Title	Date

Transport Canada / Transports Canada

MINISTERIAL DELEGATE STATEMENT OF COMPLIANCE WITH THE CERTIFICATION BASIS

1. Reference No.	2. Applicant Name
NAPA File; P-16-0103 Aero Design Project #; 940.90 Wings Engineering Project No.; WPN1604	Wings Engineering Ltd. and agent for holder: Aero Design Ltd. 9888A Malaspina Road Powell River, BC, V8A 0G3 Tel: 604.483.2376 www.aerodesign.ca

Part 1: Identification of Aeronautical Product

3. Applicable Design Approval Document No.

AS350 Series; TCDS No. H-83, Issue 22
AS355 Series; TCDS No. H-87, Issue 9

4. Model No.	5. Make
AS350B, B1, B2, B3, BA & D AS355E, F, F1, F2, N & NP	Airbus Helicopters (State of design: France)

6. Type (aircraft, engine, propeller, appliance, part)

Helicopter

Part 2: Substantiating Reports and Data

7. Number	8. Title
See continuation sheet/s.	See continuation sheet/s.

9. Purpose of Finding of Compliance

WRT Aero Design Ltd. STC SH08-16, Issue 5, 08 Sept 2014

- Installation of External Attachment Provisions and Cargo Basket.

AC & SI 521-005, Phase V - Post Certification Activities to approve one-off modifications to Cargo Basket Assy PN 94010, SN 94001-57 iaw DAR 304's EPM.

- NO CHANGE to the approval certificate.
- The basket was reinforced in order to add cutouts and cover plates to facilitate the installation of portable survey equipment.
- No changes to the installation instructions, FMS or ICA. i.e.; no changes to limitations.
- Service Instructions SI940.91 were prepared to note that the basket modifications, cover plates, equipment mounting plates and equipment cannot exceed the existing 300 lb maximum permissible distributed load limitation and to provide additional W&B information.

10. Applicable Elements of Certification Basis

See certification plan CP940.90 Rev 0, Appendix A, Compliance Program Checklist:

- DAR 304 has addressed FoC requirements wrt major changes for the DCL drawings and reports noted per Boxes 7 & 8.
- Aero Design's DCL format has been updated to match DAR's EPM requirements for document control to note the documents that have been revised and added to order to support this one-off change to the approval package.

Part 3: Ministerial Delegate Finding of Compliance with the Certification Basis

Under the authority vested in me by the Minister under subsection 4.3(1) of the Aeronautics Act, I hereby find that the type design of the aeronautical product is in compliance with the certification basis as demonstrated by the applicant's substantiating reports and data to the best of my knowledge.

11. Signature of Delegate	12. Name	13. Delegate No.	14. Date (yyyy-mm-dd)
James Tinson	James Tinson	304	2016-04-04

MINISTERIAL DELEGATE STATEMENT OF COMPLIANCE WITH THE CERTIFICATION BASIS

7. Number (Continued from Sheet 1)	Rev, Date	8. Title (Continued from Sheet 1)
DCL940-1	2*, 31 Mar 2016	Document Control List Configuration F – Extra-Long External Cargo Basket Installation
DCL940-3	2, 31 Mar 2016	Document Control List Extra-Long External Cargo Basket Assembly
DCL940-3	2*, 31 Mar 2016	Document Control List Extra-Long External Cargo Basket Assembly
94091	0, 04 Feb 2016	Basket Modification, SN 94001-57
94092	0, 04 Feb 2016	Lid Modification, SN 94001-57
SI940.91	0*, 04 Apr 2016	Service Instructions, SN 94001-57
CP940.90	0, 04 Apr 2016	Certification Plan – One-off Custom Basket, SN 94001-57
ER940.90	0, 31 Mar 2016	Engineering Report – One-off Custom Basket, SN 94001-57
TR940.91	0, 30 Mar 2016	Load Test Plan and Report – One-off Custom Basket, SN 94001-57
*Stamped approved by DAR 304		

INSTRUCTIONS FOR COMPLETION OF THE FORM MINISTERIAL DELEGATE FINDING OF COMPLIANCE WITH THE CERTIFICATION BASIS

Block 1 - Enter a number unique to the originator or applicant for the type design approval to which the finding of compliance pertains. In the case where a new or amended design approval document will be issued, the number should be either the NAPA project number. In the case where a NAPA project number is not generated the reference number should be one generated and controlled by the applicant.

Block 2 - Enter the name of the applicant who applied for the type design approval.

Block 3 - In the case of findings of compliance for the initial type design approval of an aeronautical product this block would be left blank or as an example, add the Certification Plan report number. Otherwise enter the number of the applicable design approval document type affected. Typically this will refer to the type certificate or Canadian Technical Standard Order (CAN-TSO) design approval against which the requested type design approval would apply. "Model series XX" is not acceptable.

Block 4 - Enter each model as listed on the type certificate data sheet for the affected aeronautical product. In the case of a new aeronautical product, print or type the model to be listed on the TCDS for the aeronautical product.

Block 5 - Enter either the model series or the specific model number, as appropriate and as listed on the type certificate data sheet for the aeronautical product. If the requested type design approval is applicable to multiple models, list them separately. If the type design approval is for an appliance, part or component, separate from a type certification project, enter the model number of the appliance, part or component.

Block 6 - Enter the type of aeronautical product as listed on the product's data sheet, or describe the appliance, part or component.

Block 7 - Enter the number and revision level of the reports, drawings, analysis and documents.

Block 8 - Enter the titles of all the applicable reports, drawings, analysis, or documents in this block. If there is not enough space additional pages may be attached. The delegate or authorized person must reference all reports and data that is generated in support of the requested type design approval: drawing numbers with change letters, report numbers with revision levels dates, and so forth. If the particular finding of compliance form does not cover all applicable elements, enter an explanatory statement, for example: “This finding of compliance is for the above engineering design data only." It indicates the data listed above demonstrates conformity of the type design of the aeronautical product only with those requirements specified by paragraph and subparagraph listed below as "applicable elements of the certification basis”.

Block 9 - Enter the type of project (ie, type certificate, Canadian Technical Standard Order (CAN-TSO) design approval, supplemental type certificate, etc) and the number of the design approval document that is to be issued, if known. Provide a brief description of the purpose for the requested type design approval and to what the specific findings of compliance apply. If this finding of compliance pertains to a revision of a manual, such as the aircraft flight manual, which will not require reissue of the corresponding design approval document as specified in block 3, then block 9 should have a statement that the design approval document specified in block 3 does not require reissue. This finding of compliance is for records purpose only.

Block 10 - Enter the applicable elements of the certification basis at the section, subsection, paragraph, or other level as appropriate. This list is to include the applicable amendment levels. If the list is too long, attach additional sheets or refer to appropriate compliance documentation such as a Certification Plan if applicable. It is not sufficient for the delegate, or authorized person within an organizational delegate, to merely indicate "structural regulations" or to use other generalizations.

Block 11 - The delegate, or authorized person within an organizational delegate, signs in this block.

Block 12 - Enter the name of the delegate, or authorized person within an organizational delegate, in this block.

Block 13 - Enter the delegation number of the delegate, or authorized person within an organizational delegate, in this block. In the case of an authorized person, enter the authorized person's number followed by the number of the organizational delegate.

Block 14 - Enter the date the delegate, or authorized person within an organizational delegate, signs the form after making the finding(s) that the listed substantiating reports and data demonstrated that the type design of the aeronautical product conformed to the applicable certification basis.

General - Each Design Approval Organization or Approved Engineering Organization can choose to create their own Finding of Compliance form provided it satisfies the intent as shown on the current form.

CERTIFICATION PLAN

CP940.90

AIRBUS HELICOPTERS (EUROCOPTER)

AS350 & AS355 SERIES

QUICK RELEASE CARGO BASKET

MODEL 940, EXTRA-LONG BASKET ASSEMBLY

ONE-OFF CUSTOM BASKET ASSEMBLY

REINFORCED STRUCTURE WITH CUTOUTS AND COVERS

P/N 94010, S/N 94001-57

FOR PORTABLE SURVEY EQUIPMENT

STRUCTURAL PROVISIONS ONLY

Prepared by: Jeff Clarke, P.Tech.(Eng.)

Revision 0, 04 April 2016
(supplements Compliance Program CP940, Revision 0 for Extra Large Basket Configuration and Certification Plan CP940, Revision 1 to update holder information)

Aero Design Ltd.

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TABLE OF CONTENTS

1.0 INTRODUCTION

This certification plan details the means and methods of compliance for the Airworthiness Requirements shown on the Compliance Program (Appendix A). This document supplements the original Compliance Program CP940 Rev. 0, as amended by Certification Plan CP940 Rev. 1.

2.0 PROJECT DESCRIPTION

A geophysical survey operator has requested a model 940 cargo basket to be modified with cutouts in the bottom, front and back, and lid in order for portable survey equipment to have an unobstructed view out of the basket. Modification to the basket is to provide the structural provisions only, no aspect of the system installation is included with this modification.

3.0 BASIS OF CERTIFICATION

Reference only – no change from Certification Plan CP940 Revision 1

3.1 TCCA Basis of Certification

Airbus Helicopters (formerly Eurocopter) AS350 B, B1, B2, B3, BA, D, TCDS H-83, Issue 22:
AS350 B3 (most recent of all AS350 models):

FAR 27 effective 1 February 1965 including amendments 27-1 through 27-10.

Plus TCCA Additional Airworthiness Requirement as published in Airworthiness Manual Chapter 527 (Normal Category Rotorcraft) Change 3 dated January 3, 1994:

a) 527.1093(b)(I)(ii) and (iii) -Induction System Icing Protection.
b) 527.1301.1 -Rotorcraft Operations After ground Cold Soak.
c) 527.1557(c)(3) -Miscellaneous Markings and Placards.
d) 527.1581(e),(f) Rotorcraft Flight Manual
e) 527.1583(h) -Ambient Temperature Limitation

Eurocopter AS355 E, F, F1, F2, N, NP, TCDS H-87, Issue 9:
AS355NP (most recent of all AS355 models):

FAR 27 Amendment 20, dated March 26,1984, (such as modified by CTC 27) plus the following paragraphs of Amendment 21, dated December 6,1984:
27.21, 27.45, 27.71, 27.79, 27.143, 27.151, 27.161, 27.173, 27.175, 27.177, 27.672, 27.673, 27.729, 27.735, 27.779, 27.807, 27.1329, 27.1413, 27.1519, 27.1525, 27.1555, 27.1585, 27.1587;
Plus FAR 27 amendment 23, paragraph 27.923.

Additional Airworthiness Requirements (AARs) Canadian Airworthiness Manual, Chapter 527 (Normal Category Rotorcraft):
a) 527.1093(b)(I)(ii) and (iii) Induction System Icing Protection
b) 527.1301-1 Rotorcraft Operations After Ground Cold Soak
c) 527.1557(c) (3) Miscellaneous Markings and Placards
d) 527.1583(h) Ambient Temperature Limitation

3.2 This Modification

The basis of certification remains as defined in the applicable Type Certificate Data Sheets per STC SH08-16.

4.0 APPLICABILITY OF AIRWORTHINESS DIRECTIVES

Airworthiness Directives applicable to the Eurocopter AS350 and AS355 (all models) were reviewed on 20 March 2016, and none were found to affect this project.

5.0 PERSONNEL

Applicant: Aero Design Ltd. – Jeff Clarke, P.Tech.(Eng.)

Delegate: Jim Tinson, DAR 304

Transport Canada: Pacific Region

6.0 CERTIFICATION PLAN

The changes incorporated by this modification do no require re-issue of the approval. The certificate states "...or later approved revision" of the Document Control Lists, which will be revised to reflect the modified data.

Certification Program/Plan CP940 Revision 0 and Revision 1 have been reviewed and no change compliance items are marked "No Change" below and "No" per the Appendix A Compliance Checklist

6.1 FAR 27 Subpart B – Flight

Paragraphs 27.27, .29, .45, .51, .65, .71, .73, .75, .141, .143, .151, .161, .171, .173, .175, .177, .241, .251, .547

No Change.

6.2 FAR 27 Subpart C – Strength Requirements

Paragraphs 27.301, .303, .305, .307, .337(a), .561(b)(3)

6.2.1 Means of Compliance

a) Test

6.2.2 Method of Compliance

a) Load Test

6.2.3 Compliance Documents, Data and Testing

a) Engineering Report ER940.01, Revision 0 (existing, approved). Develops loads, determines critical conditions, and documents load test.
b) Engineering Report ER940.90, Revision 0.
c) Load Test Plan and Report TR940.91, Revision 0. Documents load test. Uses loads developed in approved ER940.01 to test modified basket assembly.

6.2.4 Schedule

Not applicable.

6.2.5 Level of Delegation

Finding of compliance to FAR 27.305, .307

6.2.6 Level of Involvement / Service

Deliverable	Transport Canada Service
None	

6.3 FAR 27 Subpart D – Design and Construction

Paragraphs 27.601, .603, .605, .609, .611, .613, .625, .787(a), .787(b)

6.3.1 Means of Compliance

a) Review and Inspect

6.3.2 Method of Compliance

a) Specifications on fabrication drawings

6.3.3 Compliance Documents, Data and Testing

a) Modification drawings
   i. 94091, Revision 0 – Basket Body Modification
   ii. 94092, Revision 0 – Basket Lid Modification
b) Fabrication and assembly drawings (existing, approved)
   i. 94010, Revision 1 – Basket Assembly
   ii. 94011, Revision 1 – Basket Body Fabrication
   iii. 94012, Revision 1 – Basket Lid Fabrication
c) Engineering Report ER940.91, Revision 0. Uses loads developed in approved ER940.01 to test modified basket assembly.

6.3.4 Schedule

Not applicable.

6.3.5 Level of Delegation

Finding of compliance to FAR 27.601, .603, .605, .609, .611

6.3.6 Level of Involvement / Service

Deliverable	Transport Canada Service
None	

6.4 FAR 27 Subpart G – Operating Limitiations and Information

Paragraphs 27.1505, .1525, .1581, .1583, .1585, .1587, .1589

6.4.1 Means of Compliance

a) Review

6.4.2 Method of Compliance

a) Service Instructions SI940.91, Revision 0

6.4.3 Compliance Documents, Data and Testing

a) Flight Manual Supplement FMS764.91 Revision 4. No changes from approved document.

b) Service Instruction SI940.91 Revision 0. Specifies supplemental loading information.

6.4.4 Schedule

Not applicable

6.4.5 Level of Delegation

Finding of compliance to FAR 27.1589

6.4.6 Level of Involvement / Service

Deliverable	Transport Canada Service
None	

6.5 FAR 27.1529

No Change

APPENDIX A

COMPLIANCE PROGRAM CHECKLIST

APPLICANT: Aero Design Ltd.
9888 A Malaspina Road
Powell River, BC, Canada
V8A 0G3

CORRESPONDANCE TO:
(If other than applicant)

DATE: 0 04 April 2016
REVISION No.

MAKE: Airbus Helicopters (Eurocopter)
MODEL: AS350 B, B1, B2, B3, BA, D; AS355 E, F, F1, F2, N, NP

REGISTRATION: All Eligible
SERIAL No.: All Eligible

NATURE OF WORK: External Attachment Provisions Installation; Quick Release Cargo Basket Installation
TYPE CERTIFICATE DATA SHEET: H-83 issue 22 / H-87 issue 9
MODEL CERTIFICATION BASIS: FAR 27 dated 1 February 1965, including amendments 27-1 thru 27-20 (AS355 NP basis, most recent of all models)
MODIFICATION CERTIFICATION BASIS: FAR 27 dated 1 February 1965, including amendments 27-1 thru 27-20 (AS355 NP basis)

Airworthiness Requirement	Change from CP940 Rev. 0/1	Subject for Compliance or Documentary Proof	Form of Substantiation	DOT	DAR	Comments
Subpart B		**Flight**				
27.27	No	Centre of Gravity Limits	N/A			No Change from Type Approval
27.29	**YES**	Empty Weight and Corresponding C of G	Data specified on inst'n drawing		X	See SI940.90 for additional W&B info
27.45	No	Performance - General	Flight Test			
27.51	No	Takeoff	Flight Test			
27.65	No	Climb: All Engines Operating	Flight Test			
27.71	No	Gliding Performance	Flight Test			
27.73	No	Performance at Min. Operating Speed	Flight Test			
27.75	No	Landing	Flight Test			
27.141	No	Flight Characteristics – General	Flight Test			Flight test in accordance with FTP764.03 and flight test performed by Transport Canada
27.143	No	Controllability and Maneuverability	Flight Test			
27.151	No	Flight controls	Flight Test			
27.161	No	Trim Control	Flight Test			Flight test in accordance with FTP940.03 and flight test performed by Transport Canada
27.171	No	Stability – General	Flight Test			
27.173	No	Longitudinal Stability	Flight Test			
27.175	No	Demonstration of Longitudinal Stability	Flight Test			
27.177	No	Static Directional Stability	Flight Test			
27.241	No	Ground Resonance	Flight Test			
27.251	No	Vibration	Flight Test			

APR 0 4 2016

Airworthiness Requirement	Change from CP940 Rev. 0/1	Subject for Compliance or Documentary Proof	Form of Substantiation	DOT	DAR	Comments
Subpart C		**Strength Requirements**				
27.301	No	Loads – Air Drag Loads	Analysis			
27.301	No	Loads – Inertia Loads	Compliance with 27.337 and 27.561			
27.303	No	Factor of Safety	Analysis			
27.305	**YES**	Strength and Deformation	Analysis and Test per ER940.90		X	Limit and ultimate loads
27.307	**YES**	Proof of Structure	and TR940.91		X	Per ER940.90
27.337(a)	No	Limit Maneuvering Load Factor - Positive	Analysis and Test			Critical load factor in downward direction.
27.547	No	Main Rotor Structure	Flight Test			See comments above
27.561	No	Emergency Landing Conditions	Analysis and Test			
27.561(b)(3)(i)	No	Emergency Landing Conditions – Up	Analysis and Test			
27.561(b)(3)(ii)	No	Emergency Landing Conditions – Forward	N/A			Forward deflection or failure of basket poses no threat to occupants.
27.561(b)(3)(iii)	No	Emergency Landing Conditions – Side	Analysis and Test			
27.561(b)(3)(iv)	No	Emergency Landing Conditions – Down	Compliance with 27.337			27.337 Maneuvering Load is Critical.
Subpart D		**Design and Construction**				
27.601	**YES**	Design	Basket body and lid drawings per DCL940-3, Rev. 2		X	Design is conventional.
27.603	**YES**	Materials			X	Materials used are specified in Mil-Hdbk-5J.
27.605	**YES**	Fabrication Methods			X	Design is conventional.
27.609	**YES**	Protection of Structure			X	
27.611	**YES**	Inspection Provisions			X	Design is easy to inspect.
27.613	No	Material Strength Properties and Design Values	Values used as per Mil-Hdbk-5J			
27.625	No	Fitting Factor	Analysis			
27.783	No	Doors	N/A			Installation does not block doors.
27.787(a)	No	Cargo and Baggage Compartments	Compliance with 23.301 through 307			
27.787(b)	No	Cargo and Baggage Compartments	Design			Basket is a closed container.
27.787(c)	No	Cargo and Baggage Compartments	N/A			Cargo is external to helicopter.
27.787(d)	No	Cargo and Baggage Compartments	N/A			No cargo lamps.
27.807	No	Emergency Exits	N/A			Installation does not block doors.
27.1387	No	Position Light System Dihedral Angles	N/A – statement in report			No change from Type Approval.
27.1401	No	Anticollision Light System	N/A – statement in report			No change from Type Approval.

APR 0 4 2016

APR 0 4 2016

Airworthiness Requirement	Change from CP940 Rev. 0/1	Subject for Compliance or Documentary Proof	Form of Substantiation	DOT	DAR	Comments
Subpart G		**Operating Limitations and Information**				
27.1505	No	Never Exceed Speed	Flight Test, Flight Manual Supplement FMS764.91			V_{NE} limits as specified in the existing Flight Manual Supplement (110 kts.)
27.1525	No	Kinds of Operation	Flight Manual Supplement FMS764.91			Limited to VFR only.
27.1529	No	Instructions for Continuing Airworthiness	ICA Provided			
27.1557(a)	No	Miscellaneous Markings and Placards – Baggage Compartments	Placard			
27.1557(b)	No	Miscellaneous Markings and Placards	N/A			
27.1557(c)	No	Miscellaneous Markings and Placards	N/A			
27.1557(d)	No	Miscellaneous Markings and Placards	N/A			
27.1581	No	Rotorcraft Flight Manual – General	Flight Manual Supplement FMS764.91			
27.1583(c)	No	Operating Limitations – Weight and Loading Information	Flight Manual Supplement FMS764.91			
27.1585	No	Operating Procedures	Flight Manual Supplement FMS764.91			
27.1587	No	Performance Information	Flight Manual Supplement FMS764.91			
27.1589	**YES**	Loading Information	Flight Manual Supplement FMS764.91 & Placard Service Instructions SI940.91	APR 0 4 2016 X		Placard installed on basket lid, supplemental loading information in SI specific to modified basket
Canadian Airworthiness Manual Chapter 527, change 527-3, dated 3 January 1994						
527.1093(b)(1)(ii)+(iii)	No	Induction System Icing Protection	N/A			No change from Type Approved configuration
527.1301-1	No	Rotorcraft Operations After Ground Cold Soak	N/A			No change from Type Approved configuration
527.1557 (c) (3)	No	Miscellaneous Marking and Placards	N/A			No change from Type Approved configuration
527.1581	No	Flight Manual - General	Flight Manual Supplement FMS764.91			SI/Imperial units provided
527.1583 (h)	No	Operating Limitations – Ambient Temperature	N/A			No change from Type Approved configuration

ENGINEERING REPORT

ER940.90

AIRBUS HELICOPTERS (EUROCOPTER)

AS350 & AS355 SERIES

QUICK RELEASE CARGO BASKET

MODEL 940, EXTRA-LONG BASKET ASSEMBLY

ONE-OFF CUSTOM BASKET ASSEMBLY

REINFORCED STRUCTURE WITH CUTOUTS AND COVERS

P/N 94010, S/N 94001-57

FOR PORTABLE SURVEY EQUIPMENT

STRUCTURAL PROVISIONS ONLY

Prepared by: Jeff Clarke, P.Tech.(Eng.)

Revision 0, 31 March 2016

Aero Design Ltd.

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TABLE OF CONTENTS

1.0 INTRODUCTION

This one Model 94001 Extra-Long Cargo Basket Assembly has been reinforced in order to add cutouts and cover plates to facilitate the installation of portable survey equipment.

2.0 REFERENCE TEXT

Aero Design Ltd. Engineering Report ER940.01, Revision 0, 20 October 2011, Quick Release Cargo Basket – Larger Cross Section, Extended Length, approved by E. Burgoin DAR 290M

-test for mounting provisions remains valid.

-loads used for test are duplicated for this modification

Aero Design Ltd. Load Test Plan and Report TR940.91, Revision 0, 30 March 2016, Quick Release Cargo Basket – Larger Cross Section, Extended Length, One Off Custom Basket Assembly S/N 94001-57

-load tests for modified basket assembly.

Aero Design Ltd. Modification Drawings:

Basket Body Modification Drawing 94091, Revision 0

Basket Lid Modification Drawing 94092, Revision 0

3.0 BASIS OF CERTIFICATION

Modification to the cargo basket by adding cutouts does not affect the original basis of certification for the cargo basket.

4.0 MODIFICATION DESCRIPTION

Refer to modification drawings 94091, revision 0, and 94092, revision 0.

The basket body is modified by welding tubing "spine" members down both sides of the bottom of the basket, near the corners on the flat section of the body, instead of a single spine down the center. Mesh is installed from the upper rims of the basket down to the spines to provide an unobstructed opening down the middle. The spine members have bushings welded in place, 3 per side per bay, to allow installation of cover plates or equipment mounting plates in the bottom of the basket. The basket hoops remain in their original positions and are not modified.

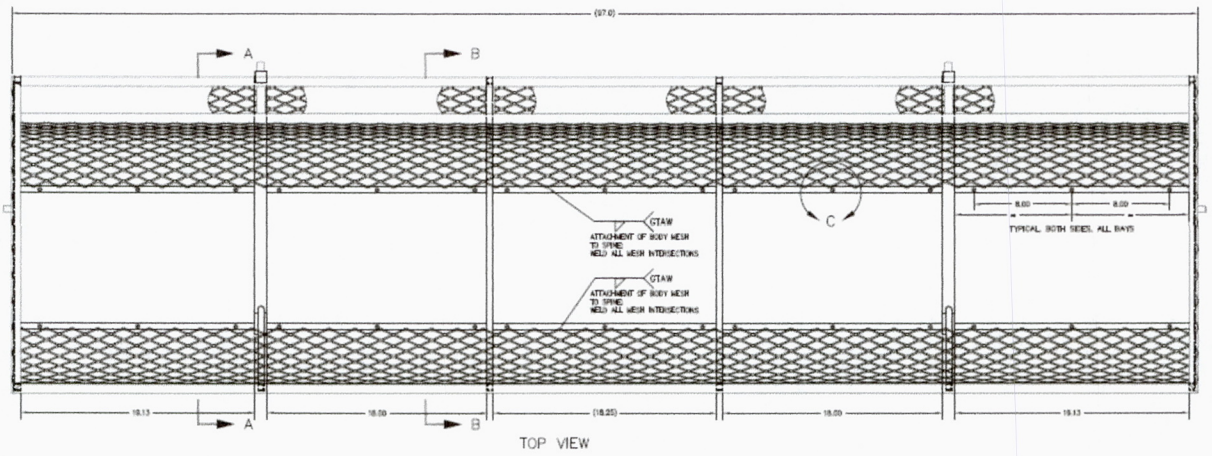

Figure 4.0.1 – Looking down into basket

The forward and aft ends of the basket receive additional tubing members to support the edges where the mesh is removed to provide an opening in the end. The vertical tubing members have bushings welded in place to allow installation of cover plates.

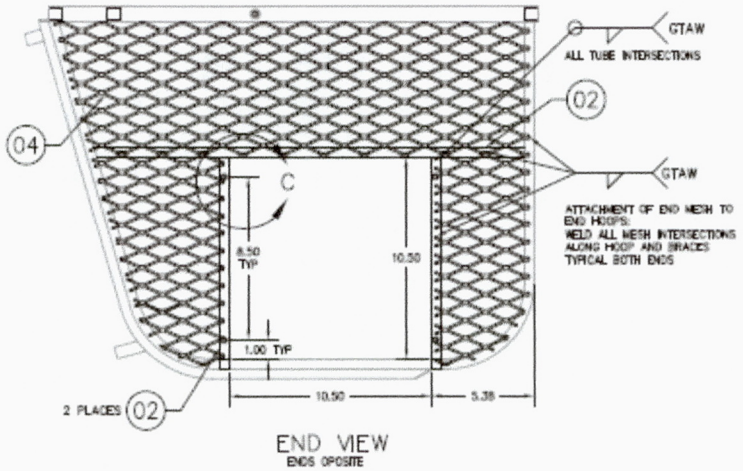

Figure 4.0.2 – Looking at end of basket

Covers or equipment mounting plates are specified to be installed in Service Instruction SI940.91, using AN3 bolts or MS27039-10 screws.

The lid is modified with the addition of tubing members at the ends to support the edges of the mesh where it is cut out on the last bay at both ends. Bushings are welded into the members, 3 places per side, to allow for installation of cover plates.

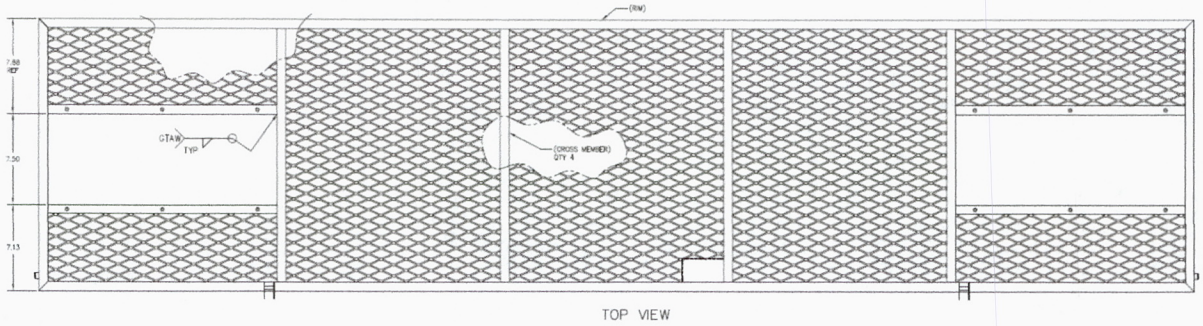

Figure 4.0.3 – Looking down at lid

Covers or equipment mounting plates are specified to be installed in Service Instruction SI940.91, using AN3 bolts or MS27039-10 screws.

5.0 LOADS

The loads were determined in the original certification engineering report, ER940.01, revision 0. The positive maneuvering load combined with drag is the critical condition.

From ER940.01, revision 0:

P_{man_lim} = 1306 lbs	Limit maneuvering load
P_{man_ult} = 1958 lbs	Ultimate maneuvering load
Pdrag_lim = 340 lbs	Limit drag load
Pdrag_ult = 510 lbs	Ultimate drag load

6.0 STRUCTURAL COMPLIANCE

6.1 Combined Positive Maneuvering and Drag Load Condition

Structural compliance for the critical combined positive maneuvering and drag load condition is demonstrated by test. Refer to Test Plan and Report TR940.91, Revision 0, for load testing.

6.2 Lid Cover Plates

Structural compliance for the lid cover plates is demonstrated by test. Refer to Test Plan and Report TR940.91, Revision 0, for load testing.

6.3 Forward and Aft End Cutout

Modification of the forward and aft ends to add cutouts through the mesh in accordance with drawing 94091 adds structure to the end of the basket. The strength is increased over the un-modified configuration.

A cover made of 0.050" 6061-T6 aluminum sheet is bolted in place using through bushings in the support tubes to contain the cargo within the basket, with a flange on the bottom to ensure the cover does not deflect as it is unsupported on the bottom edge. This configuration provides at least equivalent strength to the mesh removed by the modification.

7.0 SERVICE INSTRUCTION SI 940.91

In order to convey information about and requirements for the modifications to the installer, service instruction SI 940.91 is provided. The information includes:

- Updated weight and balance information:
  - The modified assembly including cover plates is 22.7 lbs heavier than the un-modified basket. This weight includes the cover plates installed in the bottom of the basket. The increased weight is subtracted from the allowable cargo load, as indicated in Service Instruction SI940.91.
  - Locations of the cover plates for weight and balance purposes.
  - Reference to placard information.
- Requirements for installation of cover plates:
  - The Lid's Top Cover Plates must be installed for egress safety purposes.
  - Cover plates or equipment mounting plates must be installed to cover all cutouts in the basket structure before flight, using all provided fastener locations in the basket structure.
  - Fasteners shall be AN3 bolts or MS27039 #10 structural screws of appropriate length, with NAS1149F0363P or NAS1149F0332P washers, secured with MS21044N3 or MS21042-3 nuts.
- Requirements for equipment mounting plates
  - See above Cover Plate requirements.
  - Equipment must not extend outside the structure of the basket.
  - Structural installation of round or tear-drop shape, low profile, GPS or similar antenna on the Lid Cover Plate/s is acceptable. Maximum height 1 in (25 mm).

- Do not add any additional attachment holes to the Cargo Basket Assembly.
- Equipment loading should not exceed the allowable equipment payload divided by bottom area:

  $144\ in^2 / ft^2 * 277\ lb / 11.5\ in / 96.5" = 35.9\ lb/sq.ft\ (175\ kg/m^2)$
- See FAA AC 43.13-2B, Chapter 1. Structural Data for guidance wrt the installation of the Portable Survey Equipment.

LOAD TEST PLAN AND REPORT

TR940.91

Revision 0, 30 March 2016

AIRBUS HELICOPTERS (EUROCOPTER)

AS350 & AS355 SERIES

QUICK RELEASE CARGO BASKET

MODEL 940, EXTRA-LONG BASKET ASSEMBLY

ONE-OFF CUSTOM BASKET ASSEMBLY

REINFORCED STRUCTURE WITH CUTOUTS AND COVERS

P/N 94010, S/N 94001-57

Prepared by: Jeff Clarke, P.Tech.(Eng.)

Accepted by: Jim Tinson DAR 304 via CP940.90 and applicable SoC

Tested at: Aero Design's Powell River facility

All testing by; Aero Design's on-site staff

Witnessed by: Jim Tinson DAR 304 via Skype, 30 March 2015, 10-11 am
and Jason Rekve DOM, Aero Design (On-site Witness)

Aero Design Ltd.

9888A Malaspina Road, Powell River, BC, V8A 0G3
Phone: 604-483-2376
Fax: 604-483-2372
www.aerodesign.ca

TABLE OF CONTENTS

1.0 INTRODUCTION

This one Model 94001 Extra-Long Cargo Basket Assembly has been reinforced in order to add cutouts and cover plates to facilitate the installation of portable survey equipment.

2.0 REFERENCE DOCUEMENTS

Aero Design Ltd. Engineering Report ER940.90, Revision 0, 21 March 2016, Quick Release Cargo Basket – One-off Custom Basket Assembly

-specifies loads from original certification tests per ER940.01

3.0 REQUIRED ATTACHMENTS

- Aero Design Ltd. Modification Drawings:

  Basket Body Modification Drawing 94091, Revision 0

  Basket Lid Modification Drawing 94092, Revision 0

- Aero Design Ltd. (Company only) completed AN B043 Conformity Inspect Record
- Calibration Certificate 371377 for Hanson Spring Scale Model 8930 (0-300 lb)
- Calibration Certificate 371378 for Pelouze Balance Scale Model 4010 (0-150 lb), S/N 401008011270, used to weigh lead shot
- TR940.91_0_Load.Test.Photo.Record.No.1.pdf. to meet the photo record keeping requirements wrt both test loads and distortion. i.e.; Front-top angle and side views of Pre-Load, Limit/Ultimate test configurations and post-test condition.

4.0 LOADS

The loads were determined in the original certification engineering report, ER940.01, revision 0. The positive maneuvering load combined with drag is the critical condition.

From ER940.01, revision 0:

P_{man_lim} = 1306 lbs	Limit maneuvering load
P_{man_ult} = 1958 lbs	Ultimate maneuvering load
P_{drag_lim} = 340 lbs	Limit drag load
P_{drag_ult} = 510 lbs	Ultimate drag load

The basket body as assembled weighs 72 lbs and applies 1g down. This load is subtracted from the maneuvering loads for the test.

P_{man_lim} = 1234 lbs	Limit maneuvering load
P_{man_ult} = 1886 lbs	Ultimate maneuvering load

To simulate personnel loading on the lid cover plates, apply 300 lb downward load to cover plate.

5.0 TEST SETUP

Testing will follow the original ER940.01 procedures with changes to suit the modified basket.

5.1 Test Article

The test will be performed using 94010-01 Cargo Basket Assembly, S/N 94001-57, fabricated and assembled in accordance with drawing 94010 Rev. 1 and sub-assembly drawings, with the body and lid as modified as shown on drawings 94091 Rev. 0 and 94092, Rev. 0. Form AN B043 conformity inspection record will be completed by Aero Design Ltd.

5.2 Fixture

The tests are performed on a fixture that simulates the helicopter landing gear.

The fixture consists of two large rectangular steel tubes (4" x 6" x 3/8" wall), each welded to a base plate (1/2"), with channels (C5x6.7) welded to the sides to provide mounting points for further fixtures specific to the aircraft to be simulated. Tabs (1/4" plate) are welded to the top of the tubes to install bracing as required to maintain rigidity. The fixtures are bolted down to inserts in the concrete floor.

For this configuration, a set of scrap AS350 landing gear is used. The landing gear is attached to the fixture by the cross tube. The mounting provisions are installed in accordance with drawing 78602. The basket is installed on the quick release mounting beams in accordance with drawing 94001.

The downward maneuvering load is applied with bags of lead shot, 25 lbs each. The aft drag load is applied by pulling on an eyebolt inserted through a piece of plywood spanning the aft face of the basket, using a block and tackle (6:1 advantage) on a spring scale.

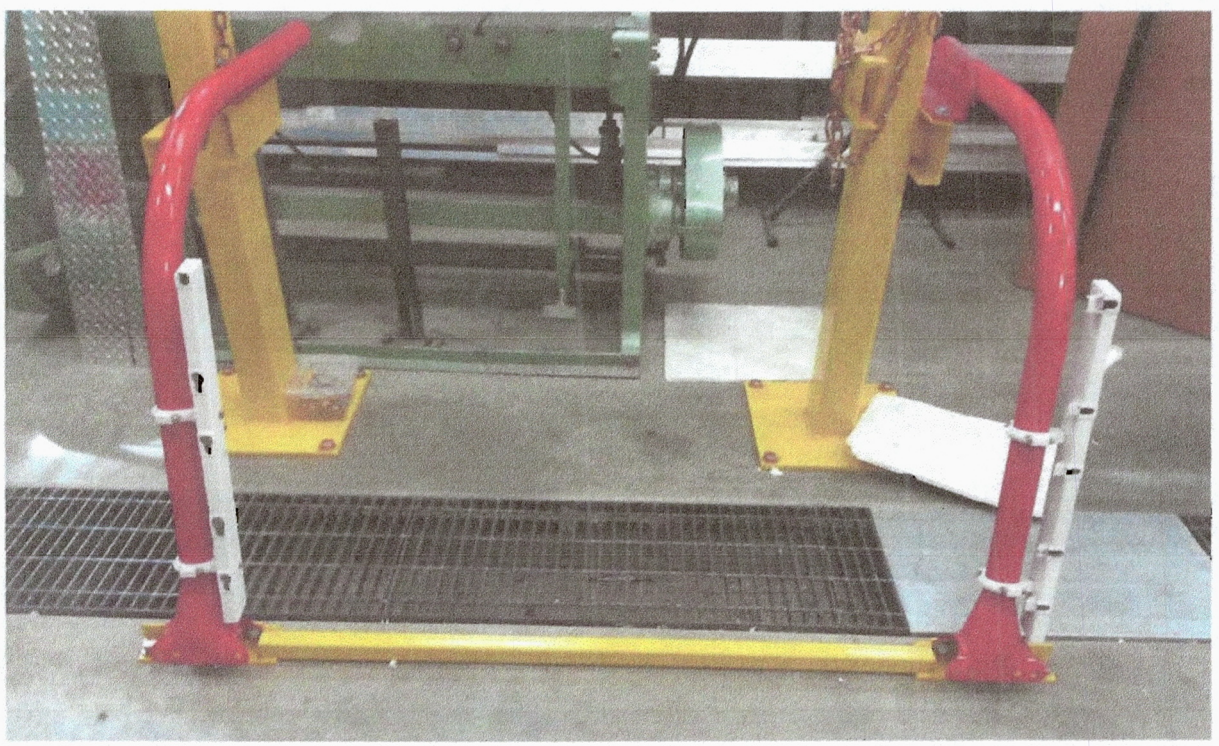

Figure 4.2.1 – Test Fixture (looking inboard)

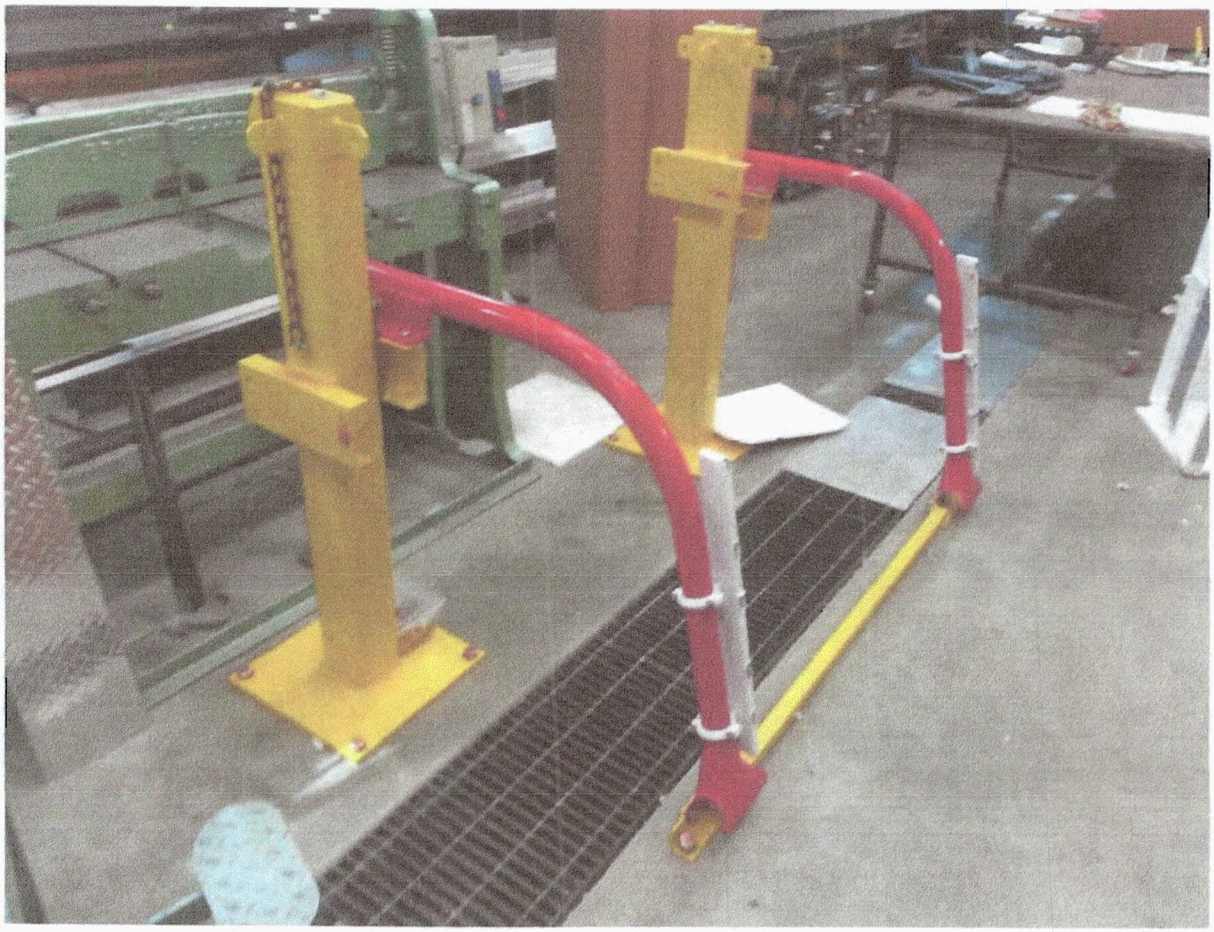

Figure 4.2.2 – Test Fixture (looking aft)

5.3 Test Procedure

1. Install the basket on the mounting beams. Open the lid. Install cover plates in bottom of basket with AN3 bolts, do not install nuts on bolts. Insert the plywood with eyebolt for drag at the aft end. Take pictures.

   Note

   The basket end plates and the lid cover plates are not installed for testing.

2. Pre-load the basket with 200 lbs of distributed ballast. Take photos.
   Measure & record the following 24 dimensions per Section 6:
   a. Squareness for the top 3/4" tube frame. Diagonal across outside corners of rim.
   b. Longitudinal distances for Fwd Basket face to Fwd Quick Release Mount face at the upper and lower mount locations. Repeat for the Aft end locations. 4 locations.
   c. Lateral opening inside dimensions between the two 3/4" longitudinal tubes at all 6 lateral frame/hoop locations (#1 is Fwd).
   d. Vertical ground to the inboard top point of the inboard 3/4" tube at all 6 lateral frame/hoop locations.
   e. Vertical ground to the outboard top point on the outboard 3/4" tube at all 6 lateral frame/hoop locations.

3. Apply the limit maneuvering load (1234 lbs) downward using bags of lead shot, 25 lbs each, evenly distributed over the bottom of the basket. 50 bags are required (1250 lbs). Apply the limit drag load (340 lbs) aft by pulling on the falling line of the block and tackle (57 lbs minimum).
4. Check operation of the lid and handle.
5. The loads must be applied for at least 3 seconds.
6. Document the test with pictures.
7. CAREFULLY open the lid. Remove the load from the basket except for 200 lbs of distributed pre-load.
8. Visually inspect the basket for signs of permanent or detrimental deformation. Ensure correct functioning of handle latching and that the basket can be removed and installed from the mounts.
9. Repeat the Step 2 requirements to measure & record all 24 dimensions.
10. Apply the ultimate maneuvering load (1886 lbs) downward using bags of lead shot, 25 lbs each, evenly distributed over the bottom of the basket. 76 bags are required (1900 lbs). Apply the ultimate drag load (510 lbs) aft by pulling on the falling line of the block and tackle (85 lbs minimum).
11. The load must be applied for at least 3 seconds.
12. Document the test with pictures.
13. CAREFULLY open the lid. Remove the load from the basket except for 200 lbs of distributed pre-load.
14. Visually inspect the basket for signs of permanent or detrimental deformation. Ensure correct functioning of handle latching and that the basket can be removed and installed from the mounts.
15. Repeat the Step 2 requirements to measure & record all 24 dimensions.
16. Remove the pre-load and then the basket from the mounting beams.
17. Visually inspect the basket for signs of permanent deformation or failure. Ensure correct functioning of handle latching.
18. Install basket on mounting beams. Install lid cover plate over one bay using AN3 bolts. Do not install nuts on bolts.
19. Load 300 lbs of lead shot on cover plate. Inspect cover plate for deformation.
20. Remove load. Remove cover plate and inspect for deformation.

6.0 TEST RESULTS

Tests performed on 30 March 2016 by Jeff Clarke and Jason Rekve of Aero Design Ltd.. Tests witnessed by Jim Tinson, DAR 304, via live stream video.

6.1 Pre Test with Pre-Load; 200 Lbs Distributed

5.3, Step 2, Pre-load the basket with 200 lbs of distributed ballast. Measure and record the following 24 dimensions			
a. Squareness		**b. Longitudinal**	
Location	**Distance (Inch)**	**Location**	**Distance (Inch)**
Fwd Inbrd – Aft Outbrd	98 5/8	Fwd Upper	19 ¾
		Fwd Lower	19 11/16
Fwd Outbrd - Aft Inbrd	98 3/4	Aft Upper	19 5/8
		Aft Lower	19 9/16

Frame # (#1 is Fwd)	**c. Lateral (Inch)**	**d. Vert Inbrd (Inch)**	**e. Vert Outbrd (Inch)**
1	21 ¾	29 11/16	27 7/16
2	21 7/8	29 11/16	27 3/8
3	21 15/16	29 ½	27 3/16
4	21 15/16	29 3/8	27 1/8
5	21 7/8	29 5/16	27 1/16
6	21 ¾	29 1/8	27 1/8

Comments

Measured top inboard tip of mounting beam to fixed point for reference
Aft 92 ¼ ; Fwd 44 15/16

6.2 Limit Load

Condition	Required Load	Actual Load	On-site Witness Initials/Name/Date
Limit Maneuvering (downward)	1234 lbs (distributed)	1250 lbs (50 bags)	JR ADO1/M79541 Jason Rekve 30 March 2016
Limit Drag (aft)	340 lbs	340 lbs (57 lb pull)	JR ADO1/M79541 Jason Rekve 30 March 2016

5.3, Step 2, Pre-load the basket with 200 lbs of distributed ballast. Measure and record the following 24 dimensions			
a. Squareness		**b. Longitudinal**	
Location	**Distance (Inch)**	**Location**	**Distance (Inch)**
Fwd Inbrd – Aft Outbrd	98 5/8	Fwd Upper	19 ¾
		Fwd Lower	19 5/8
Fwd Outbrd – Aft Inbrd	98 3/4	Aft Upper	19 3/8
		Aft Lower	19 ½

Frame # (#1 is Fwd)	**c. Lateral (Inch)**	**d. Vert Inbrd (Inch)**	**e. Vert Outbrd (Inch)**
1	21 ¾	29 11/16	27 5/16
2	21 ¾	29 5/8	27 ¼
3	22	29 ½	27 ¼
4	21 7/8	29 3/8	27 1/8
5	21 7/8	29 5/16	27
6	21 3/4	29 1/16	27

Comments

Measured top inboard tip of mounting beam to fixed point for reference
Aft 92 ¼; Fwd 45

6.3 Ultimate Load

Condition	Required Load	Actual Load	On-site Witness Initials/Name/Date
Ultimate Maneuvering (downward)	1886 lbs (distributed)	1887.5 lb (71 bags + loose weights check on loading)	DK ABOI/HP95441 Jason Rekve 30 March 2016
Ultimate Drag (aft)	510 lbs	510 lb (85 lb pull)	DK ABOI/HP95441 Jason Rekve 30 March 2016

5.3, Step 2, Pre-load the basket with 200 lbs of distributed ballast. Measure and record the following 24 dimensions			
a. Squareness		**b. Longitudinal**	
Location	**Distance (Inch)**	**Location**	**Distance (Inch)**
Fwd Inbrd – Aft Outbrd	98 5/8	Fwd Upper	19 ¾
		Fwd Lower	19 5/8
Fwd Outbrd – Aft Inbrd	98 3/4	Aft Upper	19 3/8
		Aft Lower	19 1/2
Frame # (#1 is Fwd)	**c. Lateral (Inch)**	**d. Vert Inbrd (Inch)**	**e. Vert Outbrd (Inch)**
1	21 ¾	29 11/16	26 ¾
2	21 15/16	29 5/8	26 ¾
3	21 15/16	29 ½	26 5/8
4	21 15/16	29 5/8	26 ½
5	21 7/8	29 ¼	26 ½
6	21 3/4	29 1/16	26 7/16

Comments

Measured top inboard tip of mounting beam to fixed point for reference
Aft 92 9/16 ; fwd 45 3/8

Vertical outboard height will be affected by the deflection of the beam shown in the measurement above

Deformation after ultimate load is negligible. No failure found. Lid and handle confirmed for correct operation.

6.4 Lid Cover Plate

Condition	Required Load	Actual Load	On-site Witness Initials/Name/Date
Downward	300 lbs (distributed)	300 lbs	JR AD01/M795441 Jason Rekve 30 March 2016

Comments

No deformation found

REV.	DESCRIPTION OF CHANGE	INITIALS	DATE
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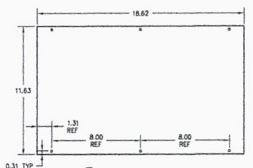
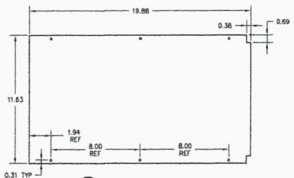
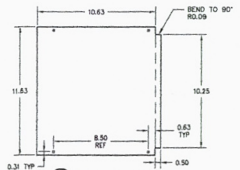


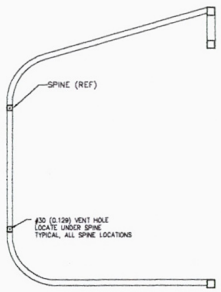
(05) BOTTOM COVER
HOLE LOCATIONS TO MATCH BUSHINGS IN BASKET



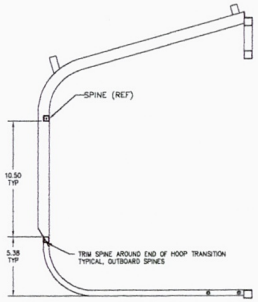
(06) BOTTOM COVER
HOLE LOCATIONS TO MATCH BUSHINGS IN BASKET



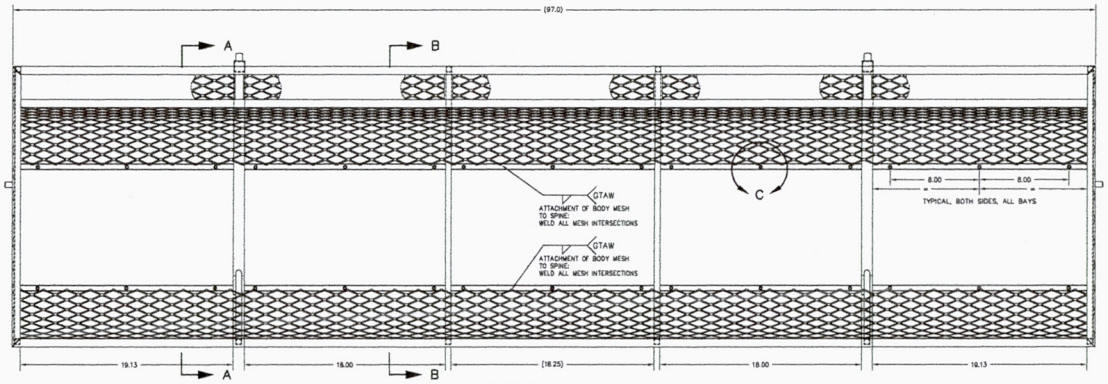
(07) END COVER
HOLE LOCATIONS TO MATCH BUSHINGS IN BASKET



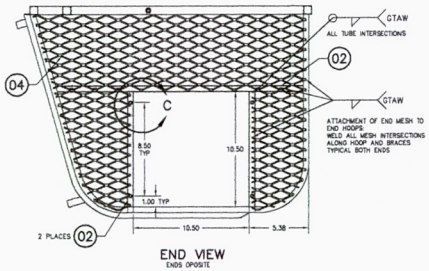
SECTION B–B
SCALE 1:4
SECTION TYP 4 PLACES



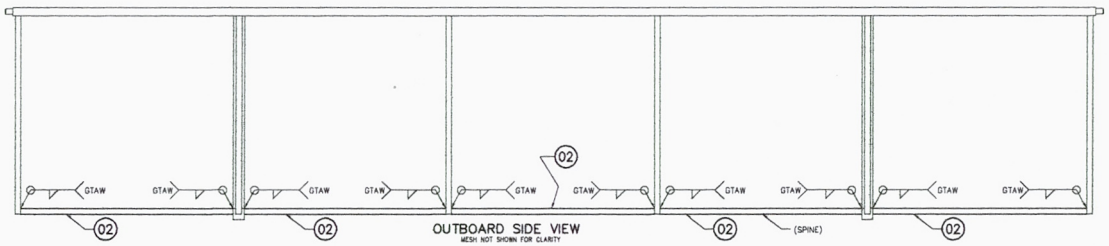
SECTION A–A
SCALE 1:4
SECTION TYP 2 PLACES



TOP VIEW

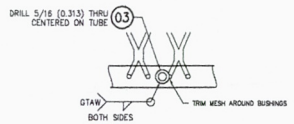


END VIEW
ENDS OPPOSITE



OUTBOARD SIDE VIEW
MESH NOT SHOWN FOR CLARITY

(01) BASKET BODY ASSEMBLY



DETAIL C
SCALE 1:1
TYPICAL, ALL BUSHING LOCATIONS

NOTES:
1. THIS DRAWING IS A MODIFICATION TO INCORPORATE OPENINGS IN THE BASKET TO PROVIDE VIEW PORTS FOR SURVEY EQUIPMENT. REMAINDER OF CONTRUCTION REMAINS IN ACCORDANCE WITH DRAWING 94011, REVISION 1.
2. LOAD TESTING IN ACCORDANCE WITH ENGINEERING REPORT ER940.B1, REVISION 0, MUST BE COMPLETED TO DEMONSTRATE STRUCTURAL STRENGTH OF THE MODIFIED ASSEMBLY.
3. COVERS (05, 06, 07) TO BE INSTALLED USING AN3 BOLTS, NAS1149F0363P WASHERS, MS21044N3 NUTS IN ALL LOCATIONS PROVIDED AFTER FINISH IS APPLIED.
4. REMOVE ALL BURRS AND BREAK SHARP EDGES
5. PRIOR TO WELDING, DRILL Ø30 (0.129) VENT HOLES IN ASSEMBLY FOR VENTING OF WELD GASES. WHEN ASSEMBLY IS COMPLETE, FILL ALL EXPOSED VENT HOLES WITH ROSETTE WELD.
6. WELDING OF 4130 STEEL TO BE COMPLETED BY GTAW METHOD TO AMS 2685C.
   4130 AND 1918 STEEL: WELDING ROD SHALL CONFORM TO ER705-2 OR EQUIVALENT.
7. THOROUGHLY DEGREASE AND POWDER COAT BASKET ASSEMBLY AFTER WELDING.
   THOROUGHLY DEGREASE AND POWDER COAT COVERS.

ITEM	PART NO.	DESCRIPTION	MATERIAL/NOTE	MATERIAL SPEC	STOCK SIZE
38	MS21044N3	NUT			
76	NAS1149F0363P	WASHER			
8	AN3-10A	BOLT			
30	AN3-11A	BOLT			
2	94091-07	07 END COVER	6061-T6 ALUMINUM	QQ-A-250/11	0.050 SHEET
2	94091-06	06 BOTTOM COVER	6061-T6 ALUMINUM	QQ-A-250/11	0.125 SHEET
3	94091-05	05 BOTTOM COVER	6061-T6 ALUMINUM	QQ-A-250/11	0.125 SHEET
A/R	3/4 – 16F	04 MESH	MILD STEEL	COMMERCIAL	
38	84272-01	03 BUSHING	4130 STEEL COND. N	MIL-T-6736	0.313 X 0.058 RND TUBE
A/R	---	02 SQUARE TUBE	4130 STEEL COND. N	MIL-T-6736	0.5 X 0.035 SQR TUBE
\	94091-01	01 BASKET BODY ASSEMBLY			

LIST OF MATERIALS

APPROVALS		DATE
DRAWN:	JEFF CLARKE	04 FEB 2015
CHECKED:	JASON REKVE	04 FEB 2018

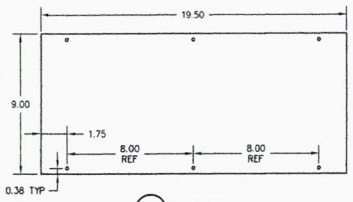
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES ON:
DECIMALS ANGLES
X.XXX ±0.010 ±1/2°
X.XX ±0.03
X.X ±0.1

AERO DESIGN LTD.
9088A MALASPINA ROAD
POWELL RIVER, BC, CANADA, V8A 0J3
TEL: 604.485.8371
www.aerodesign.ca

AIRBUS HELICOPTERS AS350 & AS355 SERIES
QUICK RELEASE CARGO BASKET
BASKET MODIFICATION

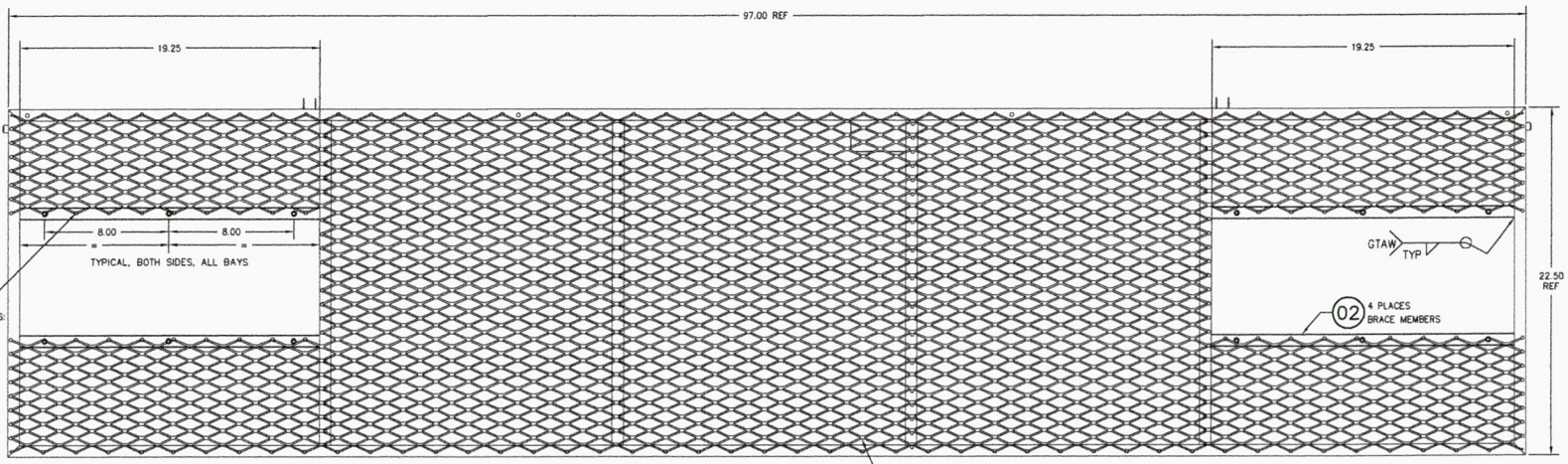
SCALE	DWG. SIZE	DWG. NO.	REV.
1 : 4	A0	94091	0
SHEET 1 OF 1			

REV.	DESCRIPTION OF CHANGE	INITIALS	DATE
0	INITIAL ISSUE – CREATED FROM 94012 REVISION 1	BJC	04/02/2016

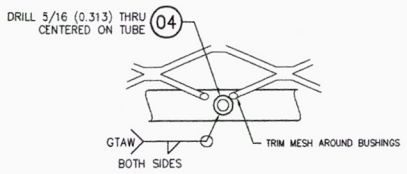


(05) COVER

HOLE LOCATIONS TO MATCH BUSHINGS IN LID



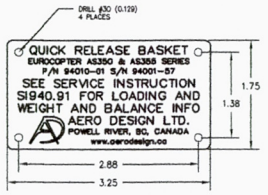
BOTTOM VIEW



DETAIL C

SCALE 1:1

TYPICAL, ALL BUSHING LOCATIONS

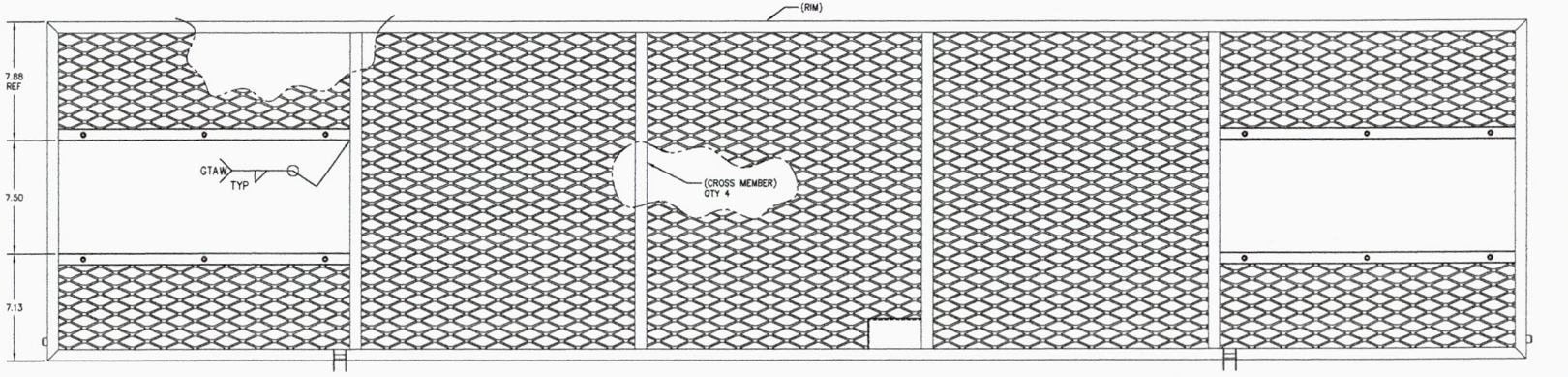


(06) PLACARD

SCALE 1:1

ENGRAVE 0.007 DEEP AS FOLLOWS:
"QUICK RELEASE BASKET" – 0.125 HIGH
"EUROCOPTER AS350 & AS355 SERIES" – 0.080 HIGH
"S/N 94001-XX" – 0.080 HIGH
"SEE SERVICE INSTRUCTION" – 0.125 HIGH
"SI940.91 FOR LOADING AND" – 0.125 HIGH
"WEIGHT AND BALANCE INFO" – 0.125 HIGH
"AERO DESIGN LTD." – 0.125 HIGH
"POWELL RIVER, BC, CANADA" – 0.080 HIGH
"www.aerodesign.ca" – 0.080 HIGH

END VIEW



TOP VIEW

(01) LID ASSEMBLY

NOTES:

1. THIS DRAWING IS A MODIFICATION TO INCORPORATE OPENINGS IN THE LID TO PROVIDE ACCESS PORTS FOR SURVEY EQUIPMENT. REMAINDER OF CONTRUCTION REMAINS IN ACCORDANCE WITH DRAWING 94012, REVISION 1. INSTALL PLACARD (ITEM 06) ADJACENT TO PLACARD 94027-01.
2. LID MAY BE MODIFIED WITH A WALKWAY ON THE UNMODIFIED BAYS IN ACCORDANCE WITH DRAWING 70405, REVISION 4, AND MAY BE ALIGNED WITH THE CUTOUT SUPPORTS.
3. COVERS (05) TO BE INSTALLED USING AN3 BOLTS, NAS1149F0363P WASHERS, MS21044N3 NUTS IN ALL LOCATIONS PROVIDED AFTER FINISH IS APPLIED.
4. REMOVE ALL BURRS AND BREAK SHARP EDGES.
5. PRIOR TO WELDING, DRILL #30 (0.129) VENT HOLES IN ASSEMBLY FOR VENTING OF WELD GASES. WHEN ASSEMBLY IS COMPLETE, FILL ALL EXPOSED VENT HOLES WITH ROSETTE WELD.
6. WELDING OF 4130 STEEL TO BE COMPLETED BY GTAW METHOD TO AMS 2685C. 4130 AND 1018 STEEL: WELDING ROD SHALL CONFORM TO ER70S-2 OR EQUIVALENT.
7. THOROUGHLY DEGREASE AND POWDER COAT BASKET ASSEMBLY AFTER WELDING. THOROUGHLY DEGREASE AND POWDER COAT COVERS.

QTY	PART NO.	ITEM	DESCRIPTION	MATERIAL	MATERIAL SPEC	STOCK SIZE
			LIST OF MATERIALS			
12	MS21044N3		NUT			
24	NAS1149F0363P		WASHER			
12	AN3-12A		BOLT			
1	94092-06	06	PLACARD	6061-T6 ALUMINUM	QQ-A-250/11	0.050 SHEET
2	94092-05	05	COVER	6061-T6 ALUMINUM	QQ-A-250/11	0.125 SHEET
12	94092-04	04	BUSHING	4130 STEEL COND. N	MIL-T-6736	0.313 X 0.058 RND TUBE
A/R	3/4 – 16F	03	MESH	MILD STEEL	COMMERCIAL	
A/R	--	02	SQUARE TUBE	4130 STEEL COND. N	MIL-T-6736	0.75 X 0.035 SQR TUBE
	94092-01	01	LID ASSEMBLY			

APPROVALS		DATE
DRAWN:	JEFF CLARKE	04 FEB 2016
CHECKED:	JASON REKVE	04 FEB 2016

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES ON:
DECIMALS: X.XXX ±0.010; X.XX ±0.03; X.X ±0.1
ANGLES: ±1/2°

AERO DESIGN LTD.
9888A MALASPINA ROAD
POWELL RIVER, BC, CANADA, V8A 0G3
TEL: 604.483.3376 www.aerodesign.ca

AIRBUS HELICOPTERS AS350 & AS355 SERIES
QUICK RELEASE CARGO BASKET
LID MODIFICATION

SCALE	DWG. SIZE	DWG. NO.	REV.
1 : 4	A1	94092	0
SHEET 1 OF 1			

CONFORMITY INSPECTION RECORD

Applicant	Aeronautical Product				Title of Change
Aero Design Ltd.	Make	Model	Serial No.	Registration	Cargo Basket Assembly 94010-01 Modified by drawings 94091 and 94092
	Airbus Helicopters	AS350/AS355	N/A	N/A	

Drawing No.	Applicant's Inspector		T.C. Inspection		Findings
	Signature	Date	Signature	Date	
94010, Rev. 1 P/N 94010-01 (Basket, modified) S/N 94001-57	Jason Rehn M795441	4Feb16			

APPLICANT'S ATTESTATION

I hereby confirm that the prototype installation for the subject

☒ MODIFICATION,

☐ REPAIR,

☐ TSO/AP-TC ARTICLE

is in conformity with the applicable installation drawing(s) listed above and that necessary ground tests have been carried out.
[Please check (✓) the applicable box.]

Additional Information:
Mounting beams and struts are not painted or powder coated as specified – does not affect flight test.

Signature: Jason Rehn M795441

Witness Jeff Clark. P.Tech.(Eng.)

TC INSPECTION

☐ ACCEPTABLE

☐ UNACCEPTABLE

Remarks:

Signature: _____

CERTIFICATE OF CALIBRATION

371377

Certification Number

Issued By

WESCAN CALIBRATION
Unit#9 - 12240 Horseshoe Way

Richmond, BC V7A 4X9
Ph: (604) 275-0600
Fax: (604) 275-0610

Wescan calibration

Certification Issued To: AERO DESIGN LTD.
9888 A Malaspina Road
Powell River, BC V8A 0G3

Purchase Order Number: CREDIT CARD(14061)

Instrument ID: AERO-002

Manufacturer: HANSON

Serial Number: N/A

Date Instrument Calibrated: Aug 19 2014

Laboratory Temperature: 23.3 °C

Type: SCALE, HANGING (0 to 300) lb

Model Number: 8930

Size: (0 to 300) lb

Date Next Calibration Due: Aug 19 2016

Laboratory Humidity: 48 %RH

Calibration Procedure Used: TQ1039

Technician Performing Calibration:

PHILIP H THORNHILL

Calibration Approved By:

GRAHAM SEYMOUR 08/21/2014
Quality Assurance

Calibrated In: WESCAN CALIBRATION VANCOUVER

Wescan Calibration certifies that the above instrument was calibrated in compliance with the requirements of ISO/IEC 17025:2005, and /or the technical requirements of the customer. Wescan's quality management system is aligned with the requirements of ISO 9001:2008. All Wescan Calibration measurements are traceable to SI units through the National Research Council (NRC), the National Institute of Standards and Technology (NIST), other National Measurement Institutes (NMIs), or to physical constants, consensus standards, or ratio measurements. Measured values apply only at the time of calibration. After that time any number of factors may cause measured values to change. The information in this certificate applies only to the identified instrument.

See Attached Data Sheet For Additional Calibration Data

Data Sheet

371377
Certification Number

INSTRUMENT ACCURACY

±1.5 % OF FULL SCALE (±4.5 LBS)

INSTRUMENT CONDITION

FOUND AND LEFT MEETING SPECIFICATION. SEE ATTACHED CALIBRATION DATA.

STANDARDS USED FOR THIS CALIBRATION

Unique ID	Description	Due Date
101035B	WEIGHT, 25 lb (CLASS F)	12/31/2017
101035C	WEIGHT, 50 lb (CLASS F)	03/31/2016
104045A	WEIGHT, 20 kg (CLASS F)	03/31/2016
104045B	WEIGHT, 20 kg (CLASS F)	03/31/2016
104045C	WEIGHT, 20 kg (CLASS F)	03/31/2016
104045D	WEIGHT, 20 kg (CLASS F)	03/31/2016
104046	WEIGHT, 10 kg (CLASS F)	12/31/2017
104052	WEIGHT, 5 kg (CLASS F)	09/30/2017

Traceable Reference: (101035B)340118 (101035C)315874 (104045A)316033 (104045B)316034
(104045C)316035 (104045D)316036 (104046)341119 (104052)337355

End of Report

Wescan calibration

Calibration procedure	TQ1039
Item type	Force gauge (Tension only)
Range	300.0 lb
Accuracy	1.5 % of full scale
Test item resolution	1.0 lb

Test	Nominal	Standard	Lower limit	Test item	Upper limit	% limits used	TUR if <4:1
	% of range	lb	lb	lb	lb		
Tension:	8%	25.0	20.50	25.0	29.5	0.0%	
	17%	50.0	45.50	50.0	54.5	0.0%	
	37%	110.2	105.73	110.0	114.7	-5.1%	
	59%	176.4	171.90	177.5	180.9	24.4%	
	81%	242.5	238.00	245.0	247.0	55.6%	
	92%	274.5	270.00	277.5	279.0	66.7%	

End of calibration data

All points tested met acceptance criteria

CERTIFICATE OF CALIBRATION

371378

Certification Number
Issued By

WESCAN CALIBRATION
Unit#9 - 12240 Horseshoe Way

Richmond, BC V7A 4X9
Ph: (604) 275-0600
Fax: (604) 275-0610

Wescan calibration

Certification Issued To: **AERO DESIGN LTD.**
9888 A Malaspina Road
Powell River, BC V8A 0G3

Purchase Order Number: **CREDIT CARD(14061)**

Instrument ID: 401008011270
Manufacturer: PELOUZE
Serial Number: 401008011270
Date Instrument Calibrated: Aug 12 2014
Laboratory Temperature: 23.1 °C

Type: BALANCE, DIGITAL PELOUZE 4010
Model Number: 4010
Size: (0 to 68) kg / (0 to 150) lb
Date Next Calibration Due: Aug 12 2016
Laboratory Humidity: 39 %RH
Calibration Procedure Used: M1037

Technician Performing Calibration:

KEN NAZARETH

Calibration Approved By:

MICHELLE HABKIRK 08/13/2014
Operations Manager

Calibrated In: WESCAN CALIBRATION VANCOUVER

Wescan Calibration certifies that the above instrument was calibrated in compliance with the requirements of ISO/IEC 17025:2005, and /or the technical requirements of the customer. Wescan's quality management system is aligned with the requirements of ISO 9001:2008. All Wescan Calibration measurements are traceable to SI units through the National Research Council (NRC), the National Institute of Standards and Technology (NIST), other National Measurement Institutes (NMIs), or to physical constants, consensus standards, or ratio measurements. Measured values apply only at the time of calibration. After that time any number of factors may cause measured values to change. The information in this certificate applies only to the identified instrument.

See Attached Data Sheet For Additional Calibration Data

Data Sheet

371378
Certification Number

INSTRUMENT ACCURACY

±0.2 kg

NOTE: ACCURACY AS PER CUSTOMER (JASON) REQUIREMENT

INSTRUMENT CONDITION

FOUND AND LEFT MEETING SPECIFICATION. SEE ATTACHED CALIBRATION DATA.

STANDARDS USED FOR THIS CALIBRATION

Unique ID	Description	Due Date
103053	WEIGHT SET, 5PC (500 g to 5 kg) CLASS ULTRA	03/31/2015
104045A	WEIGHT, 20 kg (CLASS F)	03/31/2016
104045B	WEIGHT, 20 kg (CLASS F)	03/31/2016
104045C	WEIGHT, 20 kg (CLASS F)	03/31/2016
104046	WEIGHT, 10 kg (CLASS F)	12/31/2017

Traceable Reference: (103053)301690 (104045A)316033 (104045B)316034 (104045C)316035 (104046)341119

End of Report

Scale, digital
Pelouze 4010

As found / As left

Item ID: 401008011270

Preparation for calibration

Exercise balance	Yes
Clean balance	Yes
Verify level	n/a

Linearity

Nominal	Standard	Lower limit	Test item	Upper limit	% limits used	TUR if<4:1
kg	kg	kg	kg	kg		
0.5	0.50	0.3	0.5	0.7	0.0%	
5	5.00	4.8	5.0	5.2	0.0%	
10	10.00	9.8	10.0	10.2	0.0%	
20	20.00	19.8	20.0	20.2	0.0%	
40	40.00	39.8	39.9	40.2	-50.0%	
60	60.00	59.8	59.9	60.2	-50.0%	
68	68.00	67.8	67.9	68.2	-50.0%	

Repeatability

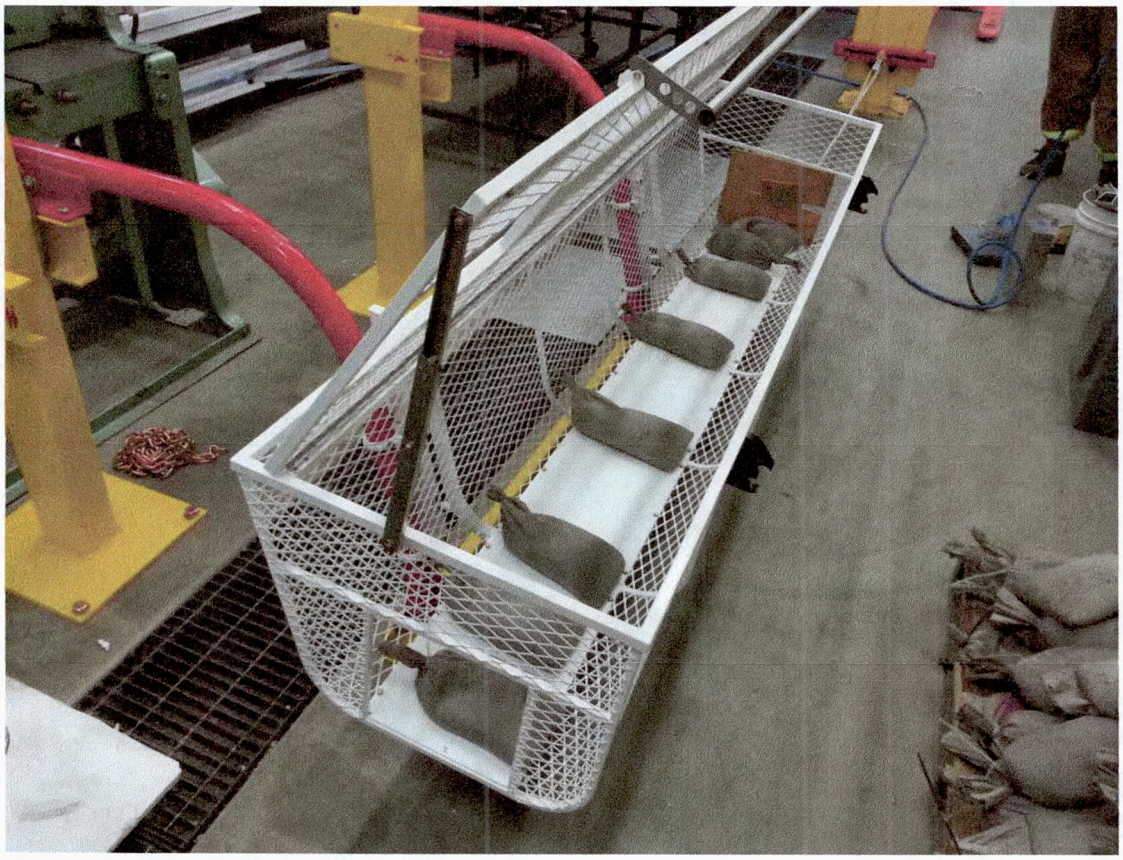
Weight					
1.0 kg	**Low range**	1.0	1.0	1.0	
10.0 kg	**Mid range**	10.0	10.0	10.0	
20.0 kg	**High range**	20.0	20.0	19.9	

End of calibration data

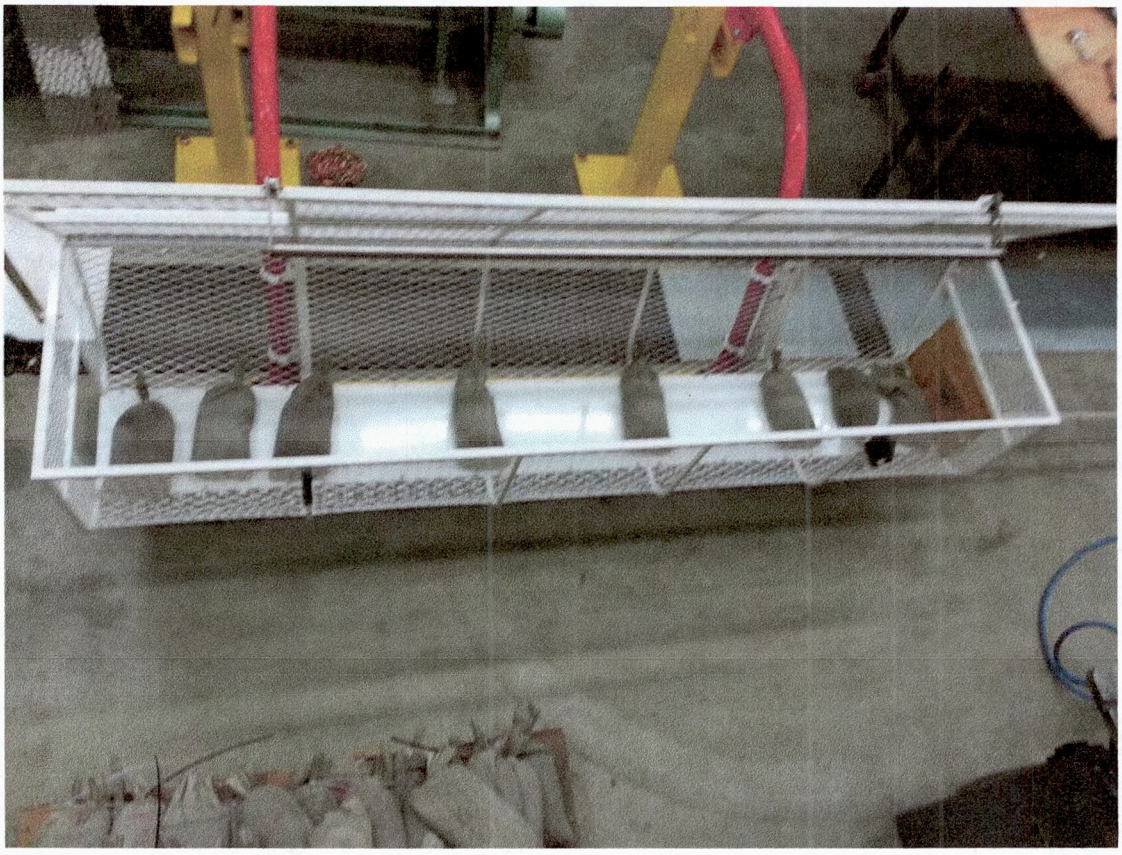
All points tested met acceptance criteria

Prepared by: MCS Mar 26 2010
Validated by: KSN Mar 26 2010
Released by: MCS Mar 26 2010

Certificate: 371378

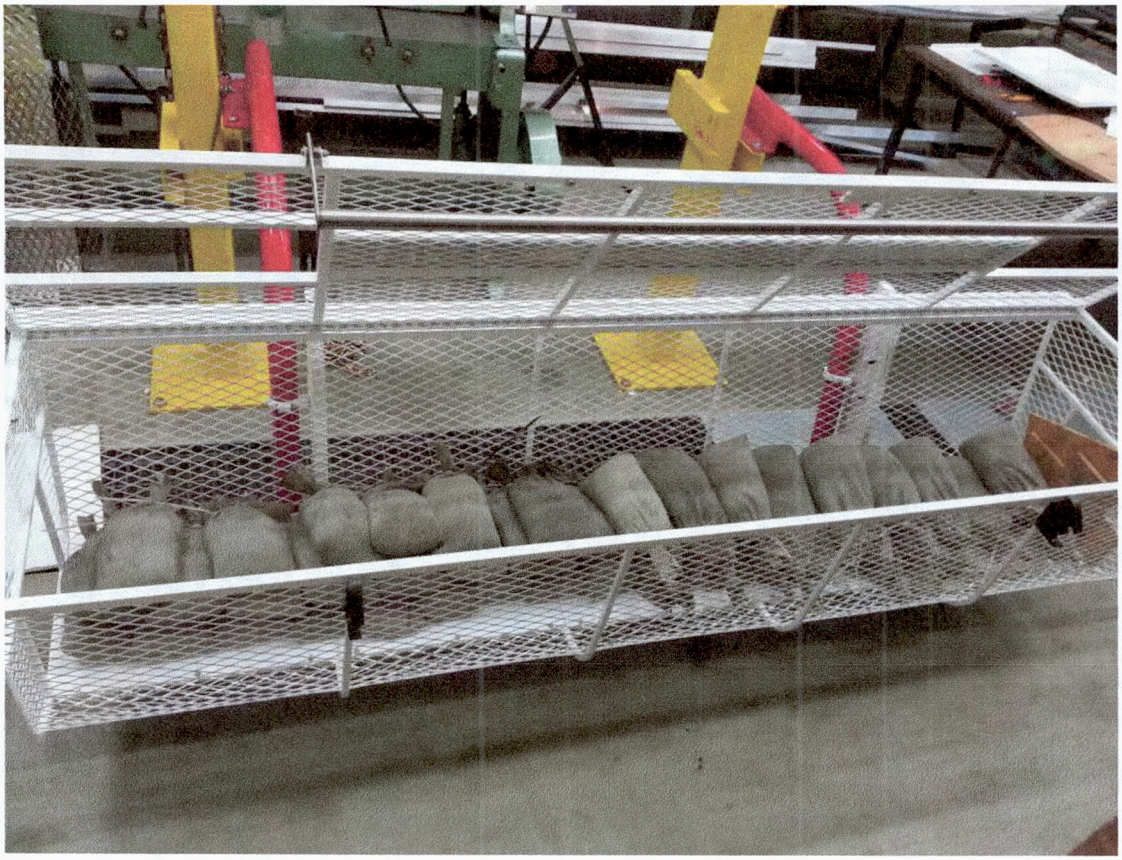


Picture 1 – Pre-Load (Front-Top Angle)

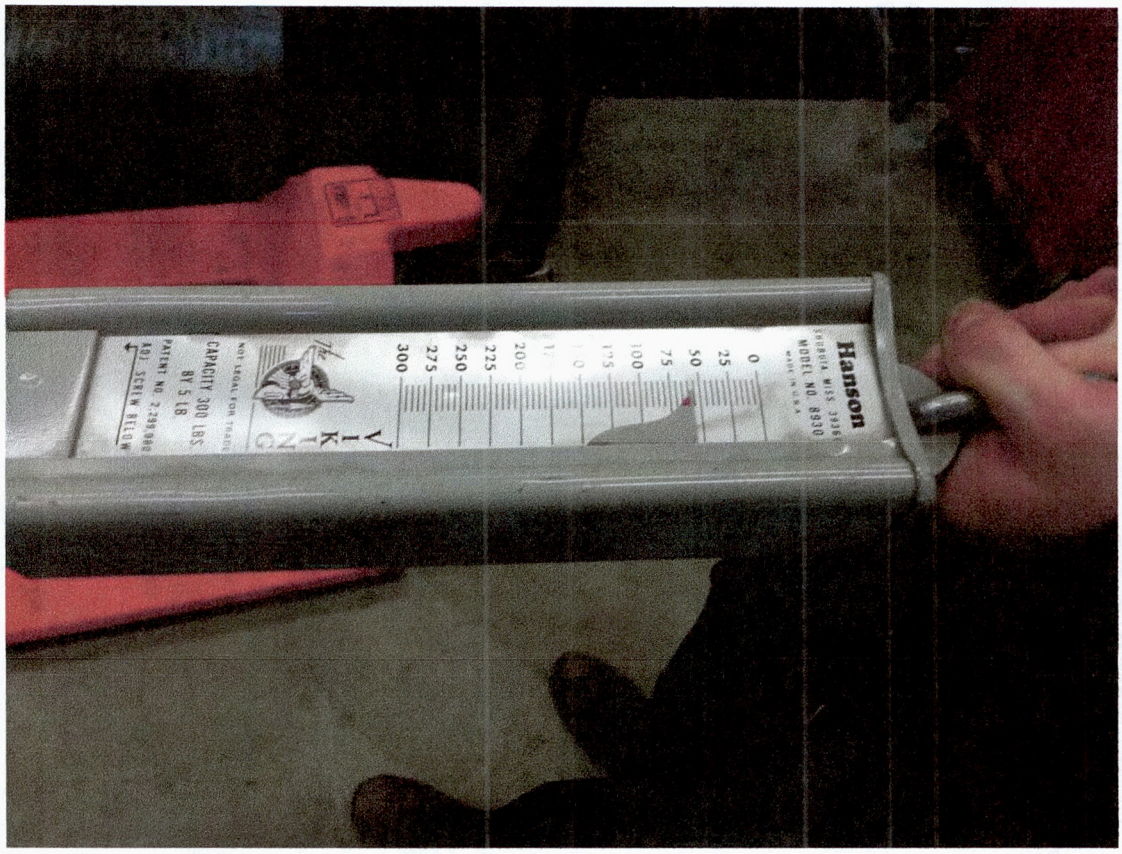


Picture 2 – Pre-Load (Top Side)

Picture 4 – Limit Load (Front-Top Angle)

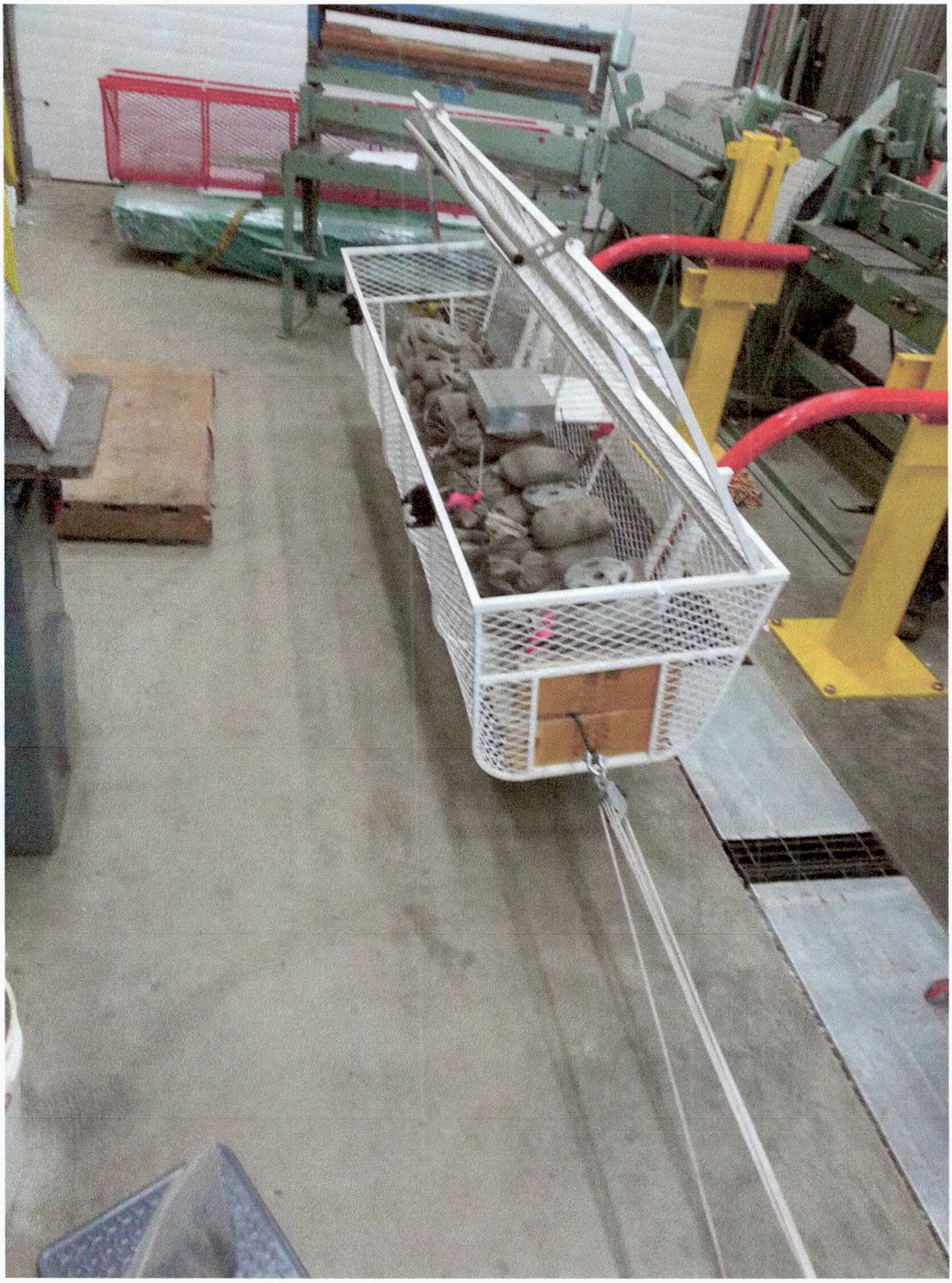


Picture 5 – Limit Load (Side)



Picture 6 – Limit Drag (60 Lbs x 6:1 Pulley Ratio = 360lbs)

Picture 7 – Limit Load (Overall)

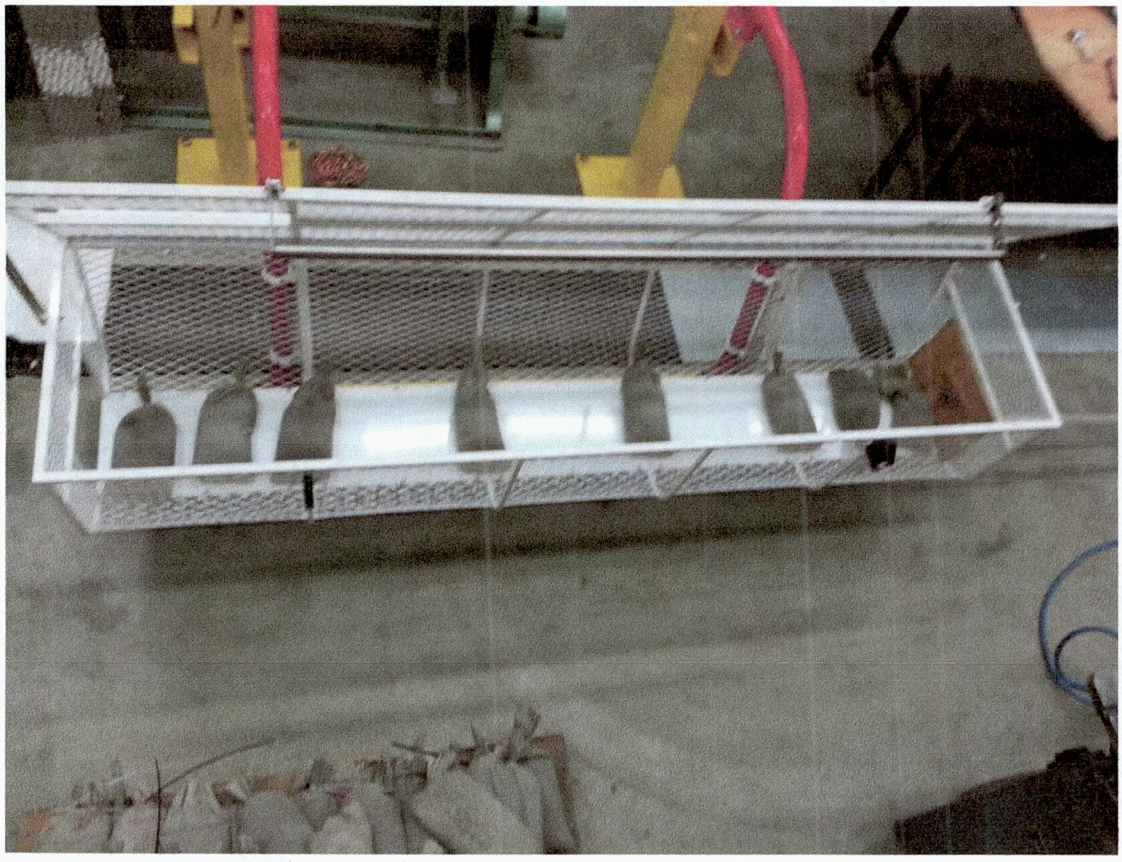


Picture 8 – Ultimate Load (Aft Top Angle)

Picture 9 – Ultimate Load (Forward Top Angle)

Picture 10 – Ultimate Load (End)

Picture 11 - Post Test (Forward Top Angle)



Picture 12 – Post Test (Top Side)

Picture 13 – Post Test (Forward Beam)

Picture 14 – Post Test (Aft Beam)

Picture 15 – Lid Cover Test

Picture 16 – Lid Cover Test

Transport Canada Transports Canada

Department of Transport

Supplemental Type Certificate

This approval is issued to:

Aero Design Ltd.
9888A Malaspina Road
Powell River, British Columbia
Canada V8A 0G3

Number: SH08-16
Issue No.: 5
Approval Date: April 11, 2008
Issue Date: September 08, 2014

Responsible Office: Prairie and Northern

Aircraft/Engine Type or Model: Airbus Helicopters AS 350 B, AS 350 B1, AS 350 B2, AS 350 B3, AS 350 BA,
Eurocopter AS 350 D, AS 355 E, AS 355 F, AS 355 F1, AS 355 F2,
Eurocopter France AS 355 N, AS 355 NP

Canadian Type Certificate or Equivalent: H-83 (Airbus Helicopters AS 350 B, AS 350 B1, AS 350 B2, AS 350 B3, AS 350 BA, Eurocopter AS 350 D)
H-87 (Eurocopter AS 355 E, AS 355 F, AS 355 F1, AS 355 F2, Eurocopter France AS 355 N, AS 355 NP)

Description of Type Design Change: Installation of External Attachment Provisions and Cargo Basket.

Installation/Operating Data, Required Equipment and Limitations:

Configuration A – External Attachment Provisions Only:

Installation of the External Attachment Provisions to be completed in accordance with Transport Canada approved, Aero Design Ltd. Document Control List, DCL786-1, Revision 4, dated 17 July 2014, or later approved revision.

...See Continuation Sheet

Conditions: This approval is only applicable to the type/model of aeronautical product specified therein. Prior to incorporating this modification, the installer shall establish that the interrelationship between this change and any other modification(s) incorporated **will not** adversely affect the airworthiness of the modified product.

F.J.B. Wright
For Minister of Transport

Canada

External Attachment Provisions installed in accordance with DCL786-1 may remain installed if the basket installation is removed.

Configuration B - External Cargo Basket (Short Basket):

Installation of Configuration A, External Attachment Provisions, is a prerequisite for installation of Configuration B, External Cargo Basket Installation. Installation of Quick Release Cargo Basket to be completed in accordance with Transport Canada approved, Aero Design Ltd. Document Control List, DCL776-1, Revision 4, dated 17 July 2014, or later approved revision

Configuration C – External Cargo Basket (Short Basket – Alternate):
-Removed-

Configuration D - External Cargo Basket (Medium Basket):
Installation of Configuration A, External Attachment Provisions, is a prerequisite for installation of Configuration D, External Cargo Basket Installation. Installation of Quick Release Cargo Basket to be completed in accordance with Transport Canada approved, Aero Design Ltd. Document Control List, DCL764-1, Revision 4, dated 17 July 2014, or later approved revision.

Configuration E - External Cargo Basket (Long Basket)
Installation of Configuration A, External Attachment Provisions, is a prerequisite for installation of Configuration E, External Cargo Basket Installation. Installation of Quick Release Cargo Basket to be completed in accordance with Transport Canada approved, Aero Design Ltd. Document Control List, DCL784-1, Revision 4, dated 17 July 2014, or later approved revision.

Configuration F - External Cargo Basket (Long Basket - Alternate)
Installation of Configuration A, External Attachment Provisions, is a prerequisite for installation of Configuration F, External Cargo Basket Installation. Installation of Quick Release Cargo Basket to be completed in accordance with Transport Canada approved, Aero Design Ltd. Document Control List, DCL940-1, Revision 1, dated 17 July 2014, or later approved revision.

Cargo Basket Modifications:
Modifications to the Cargo Basket configurations are eligible in accordance with Transport Canada approved, Aero Design Ltd., Document Control List DCL704, Revision 9, dated 17 July 2014, or later approved revision. Eligibility limitations are noted on the drawings.

Data Pertinent to All Configurations:
Transport Canada approved, Aero Design Ltd. Flight Manual Supplement FMS764.91, Revision 4, dated 16 July 2014, or later approved revision is required with this installation.

Transport Canada accepted, Aero Design Ltd. Instructions for Continued Airworthiness ICA764.90, Revision 6, dated 15 July 2014, or later accepted revision is required with this installation.

Basis of certification remains as defined in the applicable Type Certificate Data Sheets.

– End –

Aero Design Ltd.

9888A Malaspina Road
Powell River, BC, V8A 0G3
Phone: 604-483-2376
Fax: 604-483-2372
www.aerodesign.ca

DECLARATION OF CONFORMITY WITH THE CERTIFICATION BASIS

In accordance with Canadian Aviation Regulations Subpart 521, I hereby declare that the design of the External Attachment Provisions and Cargo Basket Installation, as detailed in the data approved by Transport Canada on approval SH08-16, Issue 5, has been demonstrated to conform to the best of my knowledge to the basis of certification established by the Minister for that approval in file P-16-0103.

Aero Design Ltd.

per: _____
Signature

Jeff Clarke	Vice President	04 April 2016
Print Name	Title	Date

CONFORMITY INSPECTION RECORD

Applicant	Aeronautical Product				Title of Change
Aero Design Ltd.	Make	Model	Serial No.	Registration	Cargo Basket Assembly 94010-01 Modified by drawings 94091 and 94092
	Airbus Helicopters	AS350/AS355	N/A	N/A	

Drawing No.	Applicant's Inspector		T.C. Inspection		Findings
	Signature	Date	Signature	Date	
94010, Rev. 1 P/N 94010-01 (Basket, modified) S/N 94001-57	Jason Rehn M795441	4 Feb 16			

APPLICANT'S ATTESTATION

I hereby confirm that the prototype installation for the subject

☒ MODIFICATION,

☐ REPAIR,

☐ TSO/AP-TC ARTICLE

is in conformity with the applicable installation drawing(s) listed above and that necessary ground tests have been carried out.
[Please check (✓) the applicable box.]

Additional Information:
Mounting beams and struts are not painted or powder coated as specified – does not affect flight test.

Signature: Jason Rehn M795441

witness Jeff Clark. P.Tech.(Eng.)

TC INSPECTION

☐ ACCEPTABLE

☐ UNACCEPTABLE

Remarks:

Signature: _____

LOAD TEST PLAN AND REPORT

TR940.91

Revision 0, 30 March 2016

AIRBUS HELICOPTERS (EUROCOPTER)

AS350 & AS355 SERIES

QUICK RELEASE CARGO BASKET

MODEL 940, EXTRA-LONG BASKET ASSEMBLY

ONE-OFF CUSTOM BASKET ASSEMBLY

REINFORCED STRUCTURE WITH CUTOUTS AND COVERS

P/N 94010, S/N 94001-57

Prepared by: Jeff Clarke, P.Tech.(Eng.)
Accepted by: Jim Tinson DAR 304 via CP940.90 and applicable SoC
Tested at: Aero Design's Powell River facility
All testing by; Aero Design's on-site staff
Witnessed by: Jim Tinson DAR 304 via Skype, 30 March 2015, 10-11 am
and Jason Rekve DOM, Aero Design (On-site Witness)

Aero Design Ltd.

9888A Malaspina Road, Powell River, BC, V8A 0G3
Phone: 604-483-2376
Fax: 604-483-2372
www.aerodesign.ca

TABLE OF CONTENTS

1.0 INTRODUCTION

This one Model 94001 Extra-Long Cargo Basket Assembly has been reinforced in order to add cutouts and cover plates to facilitate the installation of portable survey equipment.

2.0 REFERENCE DOCUEMENTS

Aero Design Ltd. Engineering Report ER940.90, Revision 0, 21 March 2016, Quick Release Cargo Basket – One-off Custom Basket Assembly

-specifies loads from original certification tests per ER940.01

3.0 REQUIRED ATTACHMENTS

- Aero Design Ltd. Modification Drawings:

  Basket Body Modification Drawing 94091, Revision 0

  Basket Lid Modification Drawing 94092, Revision 0

- Aero Design Ltd. (Company only) completed AN B043 Conformity Inspect Record
- Calibration Certificate 371377 for Hanson Spring Scale Model 8930 (0-300 lb)
- Calibration Certificate 371378 for Pelouze Balance Scale Model 4010 (0-150 lb), S/N 401008011270, used to weigh lead shot
- TR940.91_0_Load.Test.Photo.Record.No.1.pdf. to meet the photo record keeping requirements wrt both test loads and distortion. i.e.; Front-top angle and side views of Pre-Load, Limit/Ultimate test configurations and post-test condition.

4.0 LOADS

The loads were determined in the original certification engineering report, ER940.01, revision 0. The positive maneuvering load combined with drag is the critical condition.

From ER940.01, revision 0:

P_{man_lim} = 1306 lbs	Limit maneuvering load
P_{man_ult} = 1958 lbs	Ultimate maneuvering load
P_{drag_lim} = 340 lbs	Limit drag load
P_{drag_ult} = 510 lbs	Ultimate drag load

The basket body as assembled weighs 72 lbs and applies 1g down. This load is subtracted from the maneuvering loads for the test.

P_{man_lim} = 1234 lbs	Limit maneuvering load
P_{man_ult} = 1886 lbs	Ultimate maneuvering load

To simulate personnel loading on the lid cover plates, apply 300 lb downward load to cover plate.

5.0 TEST SETUP

Testing will follow the original ER940.01 procedures with changes to suit the modified basket.

5.1 Test Article

The test will be performed using 94010-01 Cargo Basket Assembly, S/N 94001-57, fabricated and assembled in accordance with drawing 94010 Rev. 1 and sub-assembly drawings, with the body and lid as modified as shown on drawings 94091 Rev. 0 and 94092, Rev. 0. Form AN B043 conformity inspection record will be completed by Aero Design Ltd.

5.2 Fixture

The tests are performed on a fixture that simulates the helicopter landing gear.

The fixture consists of two large rectangular steel tubes (4" x 6" x 3/8" wall), each welded to a base plate (1/2"), with channels (C5x6.7) welded to the sides to provide mounting points for further fixtures specific to the aircraft to be simulated. Tabs (1/4" plate) are welded to the top of the tubes to install bracing as required to maintain rigidity. The fixtures are bolted down to inserts in the concrete floor.

For this configuration, a set of scrap AS350 landing gear is used. The landing gear is attached to the fixture by the cross tube. The mounting provisions are installed in accordance with drawing 78602. The basket is installed on the quick release mounting beams in accordance with drawing 94001.

The downward maneuvering load is applied with bags of lead shot, 25 lbs each. The aft drag load is applied by pulling on an eyebolt inserted through a piece of plywood spanning the aft face of the basket, using a block and tackle (6:1 advantage) on a spring scale.

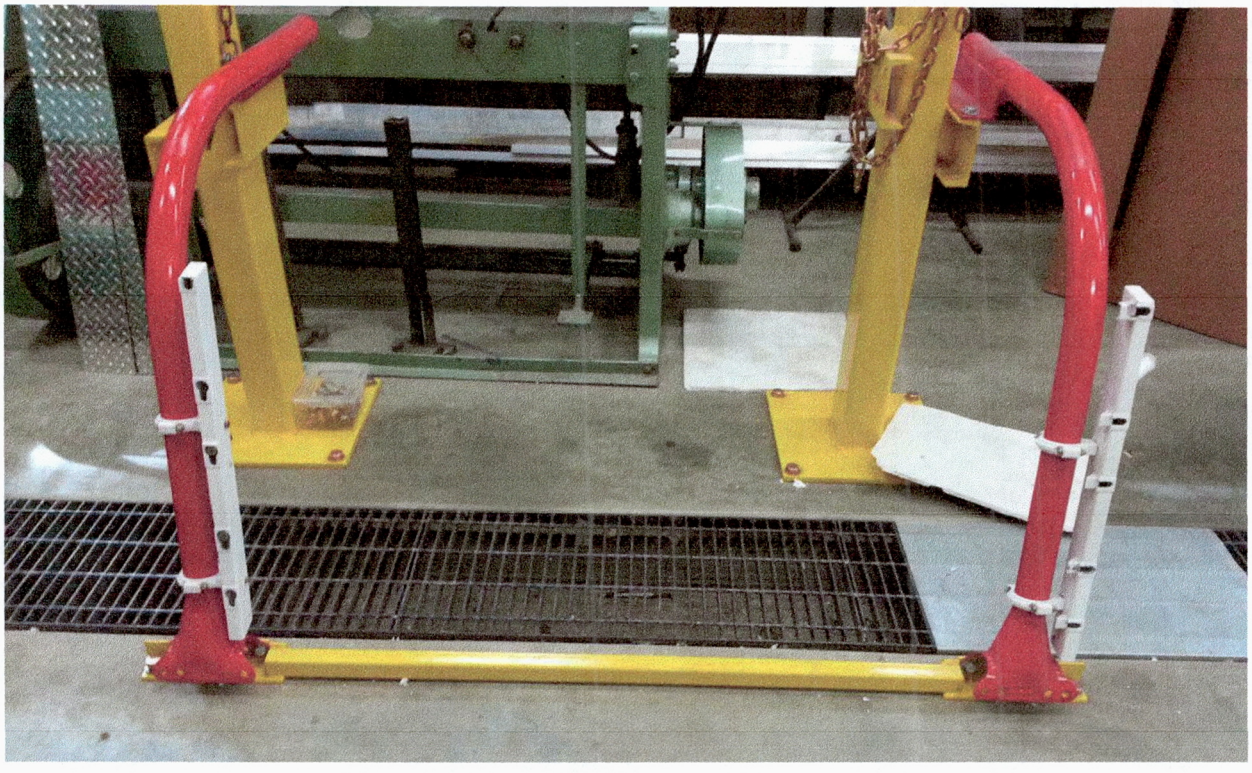


Figure 4.2.1 – Test Fixture (looking inboard)

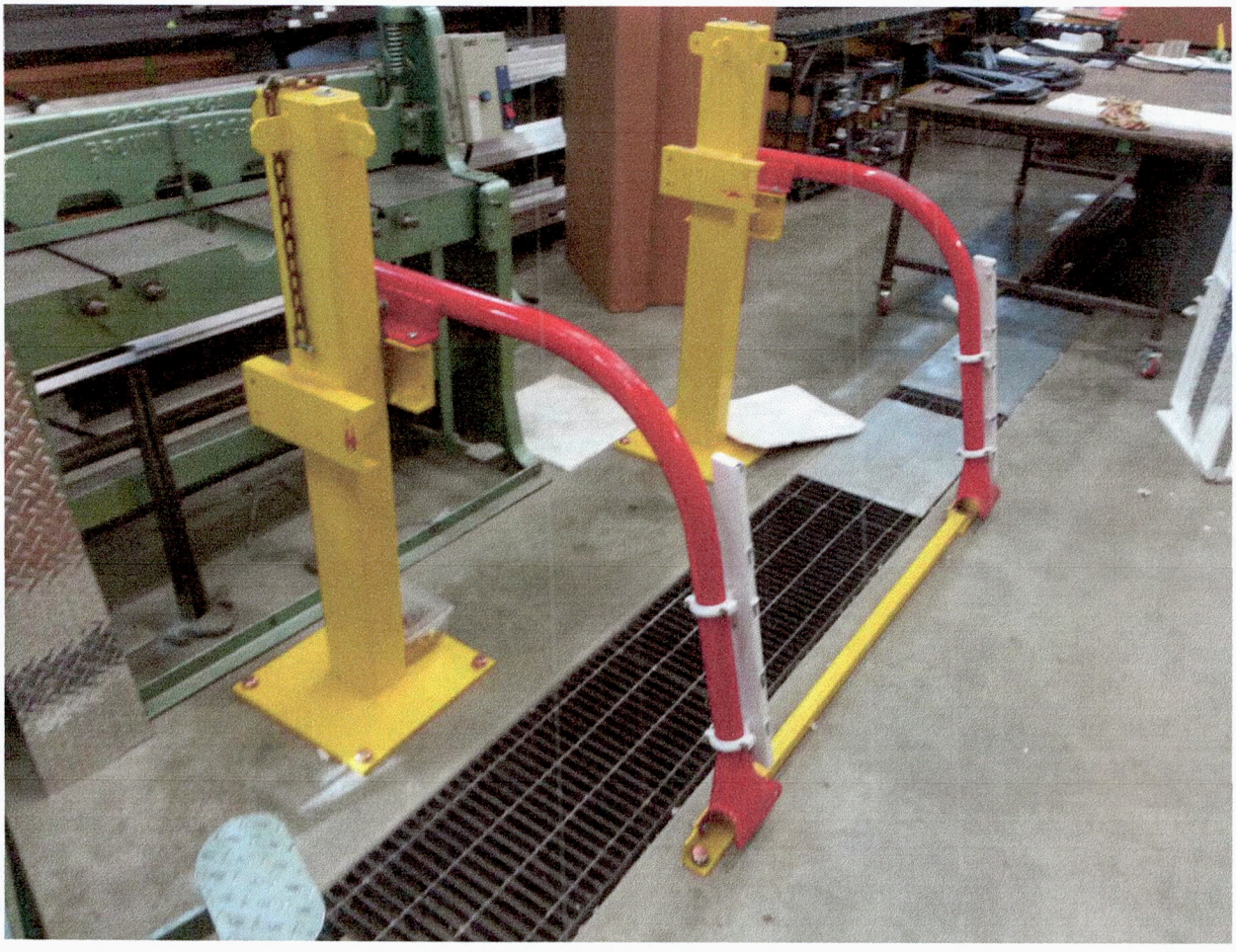


Figure 4.2.2 – Test Fixture (looking aft)

5.3 Test Procedure

1. Install the basket on the mounting beams. Open the lid. Install cover plates in bottom of basket with AN3 bolts, do not install nuts on bolts. Insert the plywood with eyebolt for drag at the aft end. Take pictures.

   Note

   The basket end plates and the lid cover plates are not installed for testing.

2. Pre-load the basket with 200 lbs of distributed ballast. Take photos.
   Measure & record the following 24 dimensions per Section 6:
   a. Squareness for the top 3/4" tube frame. Diagonal across outside corners of rim.
   b. Longitudinal distances for Fwd Basket face to Fwd Quick Release Mount face at the upper and lower mount locations. Repeat for the Aft end locations. 4 locations.
   c. Lateral opening inside dimensions between the two 3/4" longitudinal tubes at all 6 lateral frame/hoop locations (#1 is Fwd).
   d. Vertical ground to the inboard top point of the inboard 3/4" tube at all 6 lateral frame/hoop locations.
   e. Vertical ground to the outboard top point on the outboard 3/4" tube at all 6 lateral frame/hoop locations.

3. Apply the limit maneuvering load (1234 lbs) downward using bags of lead shot, 25 lbs each, evenly distributed over the bottom of the basket. 50 bags are required (1250 lbs). Apply the limit drag load (340 lbs) aft by pulling on the falling line of the block and tackle (57 lbs minimum).
4. Check operation of the lid and handle.
5. The loads must be applied for at least 3 seconds.
6. Document the test with pictures.
7. CAREFULLY open the lid. Remove the load from the basket except for 200 lbs of distributed pre-load.
8. Visually inspect the basket for signs of permanent or detrimental deformation. Ensure correct functioning of handle latching and that the basket can be removed and installed from the mounts.
9. Repeat the Step 2 requirements to measure & record all 24 dimensions.
10. Apply the ultimate maneuvering load (1886 lbs) downward using bags of lead shot, 25 lbs each, evenly distributed over the bottom of the basket. 76 bags are required (1900 lbs). Apply the ultimate drag load (510 lbs) aft by pulling on the falling line of the block and tackle (85 lbs minimum).
11. The load must be applied for at least 3 seconds.
12. Document the test with pictures.
13. CAREFULLY open the lid. Remove the load from the basket except for 200 lbs of distributed pre-load.
14. Visually inspect the basket for signs of permanent or detrimental deformation. Ensure correct functioning of handle latching and that the basket can be removed and installed from the mounts.
15. Repeat the Step 2 requirements to measure & record all 24 dimensions.
16. Remove the pre-load and then the basket from the mounting beams.
17. Visually inspect the basket for signs of permanent deformation or failure. Ensure correct functioning of handle latching.
18. Install basket on mounting beams. Install lid cover plate over one bay using AN3 bolts. Do not install nuts on bolts.
19. Load 300 lbs of lead shot on cover plate. Inspect cover plate for deformation.
20. Remove load. Remove cover plate and inspect for deformation.

6.0 TEST RESULTS

Tests performed on 30 March 2016 by Jeff Clarke and Jason Rekve of Aero Design Ltd.. Tests witnessed by Jim Tinson, DAR 304, via live stream video.

6.1 Pre Test with Pre-Load; 200 Lbs Distributed

5.3, Step 2, Pre-load the basket with 200 lbs of distributed ballast. Measure and record the following 24 dimensions			
a. Squareness		**b. Longitudinal**	
Location	**Distance (Inch)**	**Location**	**Distance (Inch)**
Fwd Inbrd – Aft Outbrd	98 5/8	Fwd Upper	19 ¾
		Fwd Lower	19 11/16
Fwd Outbrd - Aft Inbrd	98 3/4	Aft Upper	19 5/8
		Aft Lower	19 9/16
Frame # (#1 is Fwd)	**c. Lateral (Inch)**	**d. Vert Inbrd (Inch)**	**e. Vert Outbrd (Inch)**
1	21 ¾	29 11/16	27 7/16
2	21 7/8	29 11/16	27 3/8
3	21 15/16	29 ½	27 3/16
4	21 15/16	29 3/8	27 1/8
5	21 7/8	29 5/16	27 1/16
6	21 ¾	29 1/8	27 1/8

Comments

Measured top inboard tip of mounting beam to fixed point for reference
Aft 92 ¼ ; Fwd 44 15/16

6.2 Limit Load

Condition	Required Load	Actual Load	On-site Witness Initials/Name/Date
Limit Maneuvering (downward)	1234 lbs (distributed)	1250 lbs (50 bags)	JR ADO1/M79544 Jason Rekve 30 March 2016
Limit Drag (aft)	340 lbs	340 lbs (57 lb pull)	JR ADO1/M79544 Jason Rekve 30 March 2016

5.3, Step 2, Pre-load the basket with 200 lbs of distributed ballast. Measure and record the following 24 dimensions			
a. Squareness		**b. Longitudinal**	
Location	**Distance (Inch)**	**Location**	**Distance (Inch)**
Fwd Inbrd – Aft Outbrd	98 5/8	Fwd Upper	19 ¾
		Fwd Lower	19 5/8
Fwd Outbrd – Aft Inbrd	98 3/4	Aft Upper	19 3/8
		Aft Lower	19 ½
Frame # (#1 is Fwd)	**c. Lateral (Inch)**	**d. Vert Inbrd (Inch)**	**e. Vert Outbrd (Inch)**
1	21 ¾	29 11/16	27 5/16
2	21 ¾	29 5/8	27 ¼
3	22	29 ½	27 ¼
4	21 7/8	29 3/8	27 1/8
5	21 7/8	29 5/16	27
6	21 3/4	29 1/16	27

Comments

Measured top inboard tip of mounting beam to fixed point for reference
Aft 92 ¼; Fwd 45

6.3 Ultimate Load

Condition	Required Load	Actual Load	On-site Witness Initials/Name/Date
Ultimate Maneuvering (downward)	1886 lbs (distributed)	1887.5 lb (71 bags + loose weights check on loading)	JR ADOI/MP5441 Jason Rekve 30 March 2016
Ultimate Drag (aft)	510 lbs	510 lb (85 lb pull)	JR ADOI/MP5441 Jason Rekve 30 March 2016

5.3, Step 2, Pre-load the basket with 200 lbs of distributed ballast. Measure and record the following 24 dimensions			
a. Squareness		**b. Longitudinal**	
Location	**Distance (Inch)**	**Location**	**Distance (Inch)**
Fwd Inbrd – Aft Outbrd	98 5/8	Fwd Upper	19 ¾
		Fwd Lower	19 5/8
Fwd Outbrd – Aft Inbrd	98 3/4	Aft Upper	19 3/8
		Aft Lower	19 1/2
Frame # (#1 is Fwd)	**c. Lateral (Inch)**	**d. Vert Inbrd (Inch)**	**e. Vert Outbrd (Inch)**
1	21 ¾	29 11/16	26 ¾
2	21 15/16	29 5/8	26 ¾
3	21 15/16	29 ½	26 5/8
4	21 15/16	29 5/8	26 ½
5	21 7/8	29 ¼	26 ½
6	21 3/4	29 1/16	26 7/16

Comments

Measured top inboard tip of mounting beam to fixed point for reference
Aft 92 9/16 ; fwd 45 3/8

Vertical outboard height will be affected by the deflection of the beam shown in the measurement above

Deformation after ultimate load is negligible. No failure found. Lid and handle confirmed for correct operation.

6.4 Lid Cover Plate

Condition	Required Load	Actual Load	On-site Witness Initials/Name/Date
Downward	300 lbs (distributed)	300 lbs	JR AD01/M795441 Jason Rekve 30 March 2016

Comments

No deformation found

TEST PLAN AND REPORT

TR940.91

AIRBUS HELICOPTERS (EUROCOPTER)

AS350 & AS355 SERIES

QUICK RELEASE CARGO BASKET

MODEL 940, EXTRA-LONG BASKET ASSEMBLY

ONE-OFF CUSTOM BASKET ASSEMBLY

REINFORCED STRUCTURE WITH CUTOUTS AND COVERS

P/N 94010, S/N 94001-57

LOAD TEST

Prepared by: Jeff Clarke, P.Tech.(Eng.)

Accepted by: Jim Tinson DAR 304 via CP940.90 and applicable SoC

Revision 0, 28 March 2016

Aero Design Ltd.

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TABLE OF CONTENTS

1.0 INTRODUCTION

This one Model 94001 Extra-Long Cargo Basket Assembly has been reinforced in order to add cutouts and cover plates to facilitate the installation of portable survey equipment.

2.0 REFERENCE DOCUEMENTS

Aero Design Ltd. Engineering Report ER940.90, Revision 0, 21 March 2016, Quick Release Cargo Basket – One-off Custom Basket Assembly

-specifies loads from original certification tests per ER940.01

3.0 REQUIRED ATTACHMENTS

- Aero Design Ltd. Modification Drawings:

  Basket Body Modification Drawing 94091, Revision 0

  Basket Lid Modification Drawing 94092, Revision 0

- Aero Design Ltd. (Company only) completed AN B043 Conformity Inspect Record
- Calibration Certificate 371377 for Hanson Spring Scale Model 8930 (0-300 lb)
- Calibration Certificate 371378 for Pelouze Balance Scale Model 4010 (0-150 lb), S/N 401008011270, used to weigh lead shot
- TR940.91_0_Load.Test.Photo.Record.No.1.pdf. to meet the photo record keeping requirements wrt both test loads and distortion. i.e.; Front-top angle and side views of Pre-Load, Limit/Ultimate test configurations and post-test condition.

4.0 LOADS

The loads were determined in the original certification engineering report, ER940.01, revision 0. The positive maneuvering load combined with drag is the critical condition.

From ER940.01, revision 0:

P_{man_lim} = 1306 lbs	Limit maneuvering load
P_{man_ult} = 1958 lbs	Ultimate maneuvering load
P_{drag_lim} = 340 lbs	Limit drag load
P_{drag_ult} = 510 lbs	Ultimate drag load

The basket body as assembled weighs 72 lbs and applies 1g down. This load is subtracted from the maneuvering loads for the test.

P_{man_lim} = 1234 lbs	Limit maneuvering load
P_{man_ult} = 1886 lbs	Ultimate maneuvering load

5.0 TEST SETUP

Testing will follow the original ER940.01 procedures with changes to suit the modified basket.

5.1 Test Article

The test will be performed using 94010-01 Cargo Basket Assembly, S/N 94001-57, fabricated and assembled in accordance with drawing 94010 Rev. 1 and sub-assembly drawings, with the body and lid as modified as shown on drawings 94091 Rev. 0 and 94092, Rev. 0. Form AN B043 conformity inspection record will be completed by Aero Design Ltd.

5.2 Fixture

The tests are performed on a fixture that simulates the helicopter landing gear.

The fixture consists of two large rectangular steel tubes (4" x 6" x 3/8" wall), each welded to a base plate (1/2"), with channels (C5x6.7) welded to the sides to provide mounting points for further fixtures specific to the aircraft to be simulated. Tabs (1/4" plate) are welded to the top of the tubes to install bracing as required to maintain rigidity. The fixtures are bolted down to inserts in the concrete floor.

For this configuration, a set of scrap AS350 landing gear is used. The landing gear is attached to the fixture by the cross tube. The mounting provisions are installed in accordance with drawing 78602. The basket is installed on the quick release mounting beams in accordance with drawing 94001.

The downward maneuvering load is applied with bags of lead shot, 25 lbs each. The aft drag load is applied by pulling on an eyebolt inserted through a piece of plywood spanning the aft face of the basket, using a block and tackle (6:1 advantage) on a spring scale.

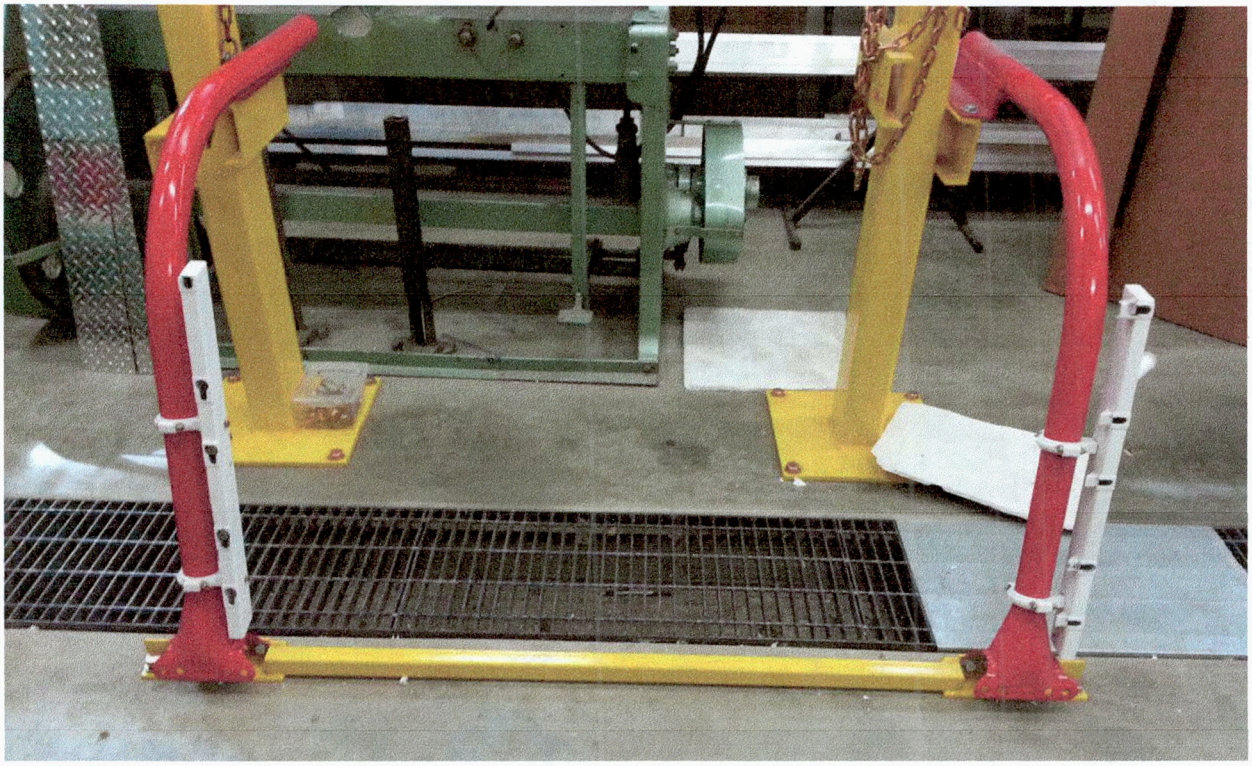


Figure 4.2.1 – Test Fixture (looking inboard)

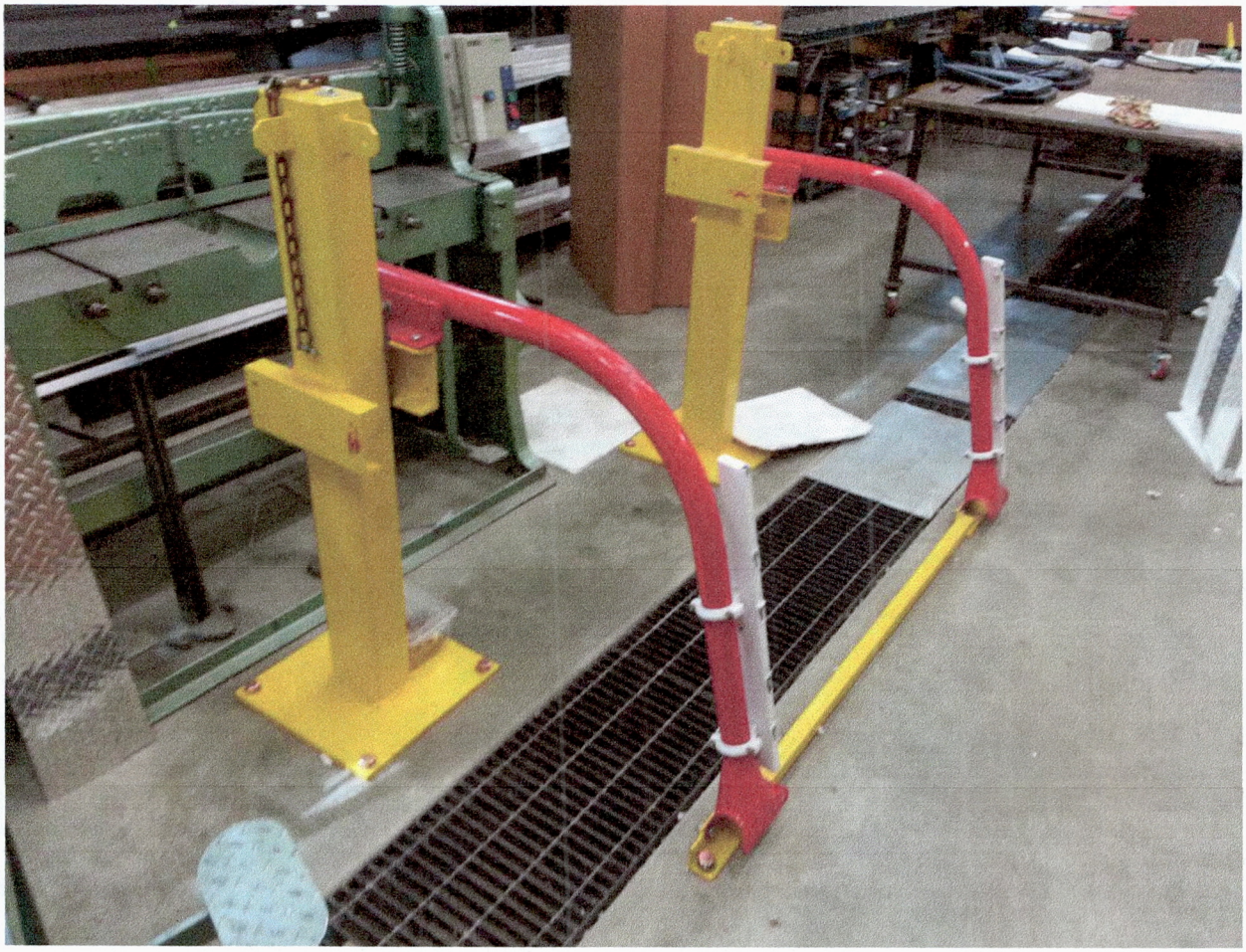


Figure 4.2.2 – Test Fixture (looking aft)

5.3 Test Procedure

1. Install the basket on the mounting beams. Open the lid. Install cover plates in bottom of basket with AN3 bolts, do not install nuts on bolts. Insert the plywood with eyebolt for drag at the aft end. Take pictures.

   Note

   The basket end plates and the lid cover plates are not installed for testing.

2. Pre-load the basket with 200 lbs of distributed ballast. Take photos.
   Measure & record the following 24 dimensions per Section 6:
   a. Squareness for the top 3/4" tube frame. Diagonal across outside corners of rim.
   b. Longitudinal distances for Fwd Basket face to Fwd Quick Release Mount face at the upper and lower mount locations. Repeat for the Aft end locations. 4 locations.
   c. Lateral opening inside dimensions between the two 3/4" longitudinal tubes at all 6 lateral frame/hoop locations (#1 is Fwd).
   d. Vertical ground to the inboard top point of the inboard 3/4" tube at all 6 lateral frame/hoop locations.
   e. Vertical ground to the outboard top point on the outboard 3/4" tube at all 6 lateral frame/hoop locations.

3. Apply the limit maneuvering load (1234 lbs) downward using bags of lead shot, 25 lbs each, evenly distributed over the bottom of the basket. 50 bags are required (1250 lbs). Apply the limit drag load (340 lbs) aft by pulling on the falling line of the block and tackle (57 lbs minimum).
4. Check operation of the lid and handle.
5. The loads must be applied for at least 3 seconds.
6. Document the test with pictures.
7. CAREFULLY open the lid. Remove the load from the basket except for 200 lbs of distributed pre-load.
8. Visually inspect the basket for signs of permanent or detrimental deformation. Ensure correct functioning of handle latching and that the basket can be removed and installed from the mounts.
9. Repeat the Step 2 requirements to measure & record all 24 dimensions.
10. Apply the ultimate maneuvering load (1886 lbs) downward using bags of lead shot, 25 lbs each, evenly distributed over the bottom of the basket. 76 bags are required (1900 lbs). Apply the ultimate drag load (510 lbs) aft by pulling on the falling line of the block and tackle (85 lbs minimum).
11. The load must be applied for at least 3 seconds.
12. Document the test with pictures.
13. CAREFULLY open the lid. Remove the load from the basket except for 200 lbs of distributed pre-load.
14. Visually inspect the basket for signs of permanent or detrimental deformation. Ensure correct functioning of handle latching and that the basket can be removed and installed from the mounts.
15. Repeat the Step 2 requirements to measure & record all 24 dimensions.
16. Remove the pre-load and then the basket from the mounting beams.
17. Visually inspect the basket for signs of permanent deformation or failure. Ensure correct functioning of handle latching.

6.0 TEST RESULTS

6.1 Pre Test with Pre-Load; 200 Lbs Distributed

Beam JB
Aft 92 1/4
Fwd 44 15/16

5.3, Step 2, Pre-load the basket with 200 lbs of distributed ballast. Measure and record the following 24 dimensions			
a. Squareness		**b. Longitudinal**	
Location	**Distance (Inch)**	**Location**	**Distance (Inch)**
Fwd Inbrd – Aft Outbrd	98 5/8	Fwd Upper	19 3/4
		Fwd Lower	19 11/16
Fwd Outbrd - Aft Inbrd	98 3/4	Aft Upper	19 5/8
		Aft Lower	19 9/16

Frame # (#1 is Fwd)	c. Lateral (Inch)	d. Vert Inbrd (Inch)	e. Vert Outbrd (Inch)
1	21 3/4	29 11/16	27 7/16
2	21 7/8	29 11/16	27 3/8
3	21 15/16	29 1/2	27 3/16
4	21 15/16	29 3/8	27 1/8
5	21 7/8	29 5/16	27 1/16
6	21 3/4	29 1/8	27 1/8

Comments

6.2 Limit Load

Condition	Required Load	Actual Load	Witness Initial
Limit Maneuvering (downward)	1234 lbs (distributed)	50 Bags 1250 lb.	
Limit Drag (aft)	340 lbs	340 lb.	

Aft Beam 92 1/4

Fwd Beam 45 -

5.3, Step 2, Pre-load the basket with 200 lbs of distributed ballast. Measure and record the following 24 dimensions			
a. Squareness		**b. Longitudinal**	
Location	**Distance (Inch)**	**Location**	**Distance (Inch)**
Fwd Inbrd – Aft Outbrd	98 5/8	Fwd Upper	19 3/4
		Fwd Lower	19 5/8
Fwd Outbrd – Aft Inbrd	98 3/4	Aft Upper	19 3/8
		Aft Lower	19 1/2

Frame # (#1 is Fwd)	c. Lateral (Inch)	d. Vert Inbrd (Inch)	e. Vert Outbrd (Inch)
1	21 3/4	29 1/16	27 5/16
2	21 3/4+	29 5/8	27 1/4
3	22 –	29 1/2	27 1/4
4	21 7/8	29 3/8	27 1/8
5	21 7/8-	29 5/16	27 –
6	21 3/4	29 1/16	27 –

Comments

6.3 Ultimate Load

Condition	Required Load	Actual Load	Witness Initial
Ultimate Maneuvering (downward)	1886 lbs (distributed)	1887.5	
Ultimate Drag (aft)	510 lbs	510	

5.3, Step 2, Pre-load the basket with 200 lbs of distributed ballast. Measure and record the following 24 dimensions			
a. Squareness		**b. Longitudinal**	
Location	**Distance (Inch)**	**Location**	**Distance (Inch)**
Fwd Inbrd – Aft Outbrd	98 5/8	Fwd Upper	19 3/4 -
		Fwd Lower	19 5/8
Fwd Outbrd – Aft Inbrd	98 3/4	Aft Upper	19 3/8
		Aft Lower	19 1/2

Aft 92 9/16

Fwd 45 3/8

Frame # (#1 is Fwd)	c. Lateral (Inch)	d. Vert Inbrd (Inch)	e. Vert Outbrd (Inch)
1	21 3/4	29 1/16	26 3/4
2	21 15/16	29 5/8	26 3/4
3	21 15/16	29 1/2	26 5/8
4	21 15/16	29 5/8	26 1/2
5	21 7/8	29 1/4	26 1/2
6	21 3/4	29 1/16	26 7/16

Comments

Local buckling stress Bruhn C6

h=b square

Fig C6.6 $\sigma_{cr} = \frac{k_h \pi^2 E}{12(1-\mu^2)} \left(\frac{t_h}{h}\right)^2$

$k_h = 4.0$

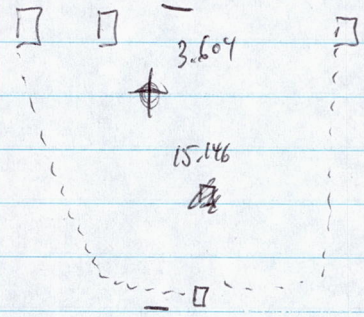
$E = 29 \times 10^6$ psi

$\mu_e = 0.32$

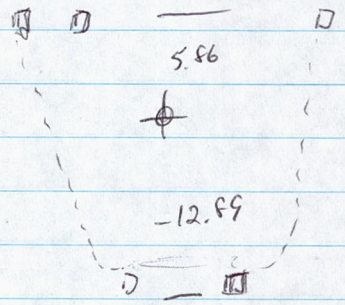
$t_h = 0.035$ in

$h = 0.5$ in

~~Ae~~ buckling



VS



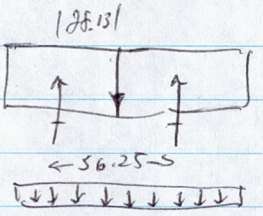
$I_x = 17.6$

$I_x = 29.87$

$F_b = \frac{M_y}{I} = \frac{\S 79 \times 28.13 \times 15.15}{17.6}$

basic basket

$f_b = 23705$ psi



300 lb/96

3.125 lb/in

$P = 1958$

$R = 1958/2$

$= 979$ lb.

1958/96

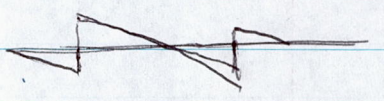
20.4 lb/in

F_b $\frac{\S 79 \times 28.13 \times 12.89}{29.8}$

Modified basket

$F_b = 11912$

sfd



$\frac{m \times 0.5}{2} = 0.035$

$m = 0.14$

$\frac{n}{4} = 0.035$

$n = 0.07$

$\frac{\Sigma Ay}{A} = \frac{0.065 \times 0.25 + (0.1 \times 18.375) \times 3}{0.065 + 3 \times 0.1}$

$= \frac{0.01625 + 5.5125}{0.365}$

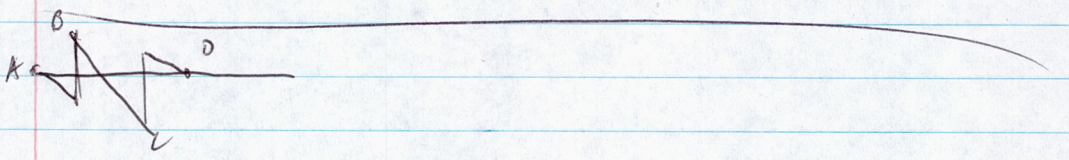
neutral axis correct

$I_x = 6.31$

$c = 3.60$

$k = \frac{2Q}{I_x/c} = \frac{2 \times \cancel{0.5\,kip^2}(3 \times 0.1\ in^2) \times 3.23}{6.31/3.6}$

$k = 1.10$



Section 1

$M = (-20.4\ lb/in \cdot x) \cdot x/2$

$M_{max} = -4029\ in\cdot lb.$

@ x 19.875

Section 2

$M = (-20.4\ lb/in \cdot x) \cdot x/2 + 979 \cdot (x - 19.875)$

$M = -20.4 \cdot 48 \cdot 48/2 + 979 \cdot (48 - 19.875)$

mid span $x = 48$ $\quad -23500.8 + 27534$

$M = +4033$

$M = 59109.2 - 55068.75$

at RH attach $x = 76.125$ $\quad M = 4040$

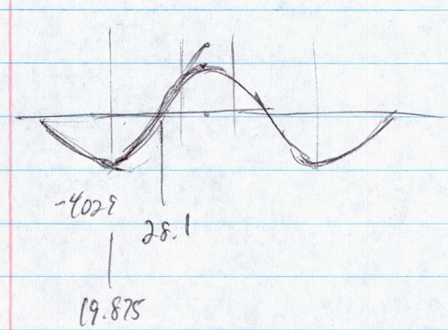
Section 3

$M = (-20.4\ lb/in \cdot x) \cdot x/2 + 979 \cdot (x - 19.875) + 979 \cdot (x - 76.125)$

$M = -94003.2 + 74526.4 + 19451.6$

end $x = 96$ $\quad = 19$ basically $\cancel{0}$

28.1 Crosses $\cancel{0}$



Sherri @ Bisco
questions

Hinges / problem w/ Terms on credit card

604-434-3531

~~trial charge~~

$F_b = \frac{My}{I}$ $\quad \frac{4028 \times 12.89}{29.87} = 1738$ psi.

Brohn fig C2.3 End Fixity Coefficient

C = 1/4 one end fixed, other free

C = 1 fixed in 2 places.

$F_c = \frac{\pi^2 E}{(L/\rho)^2}$ $\quad E = 29 \times 10^6$ psi $\quad L = 19.88$ in

$\rho = (\sqrt{0.287 \times 0.5})$ -

$\rho = 0.19037$ in

$L' = L/\sqrt{C}$

$= 19.875/\sqrt{0.25}$

$= 39.75$ in !!!

$\rightarrow \sqrt{\frac{a^2+b^2}{12}}$ → b a

$F_c = \frac{\pi^2 \times 29 \times 10^6}{(39.75/.19037)^2} = \frac{286218044}{43599} = 6565$ psi

$L' = L/\sqrt{C}$

$= 19.875/\sqrt{3}$

$L' = 6.625$

$F_c = 236$ ksi <

SAR POINT

~1 week setup Time frame?

SERVICE INSTRUCTION

SI 940.91

EUROCOPTER AS350 & AS355 SERIES

QUICK RELEASE CARGO BASKET
LARGE CROSS SECTION, EXTENDED LENGTH

SURVEY EQUIPMENT MODIFICATION
SAR POINT ENGINEERING

Prepared by: Jeff Clarke, P.Tech.(Eng.)

Revision 0, 02 March 2016

Aero Design Ltd.

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TABLE OF CONTENTS

1.0 INTRODUCTION

SAR Point Engineering, a geophysical survey operator, has requested an Airbus Helicopters AS350/AS355 extra large ski basket (model 940), that is modified with cutouts in the bottom, front and back in order for optical sensors to have an unobstructed view out of the basket. Cutouts in the lid are also required to allow installation of a GPS antenna oriented over the equipment.

These instructions supplement the information contained in the approved installation documents for the modified basket assembly.

2.0 REFERENCE TEXT

Aero Design Ltd. Drawings

Cargo Basket Installation Drawing 94001, Revision 1

Basket Body Modification Drawing 94091, Revision 0

Basket Lid Modification Drawing 94092, Revision 0

Aero Design Ltd. Instructions for Continued Airworthiness ICA764.90, Revision 6, for Airbus Helicopters AS350 and AS355 Series Helicopters, Basket Model 764, 776, 784, and 940

Aero Design Ltd. Flight Manual Supplement FMS764.91, Revision 4, for Airbus Helicopters AS350 and AS355 Series Helicopters, Basket Model 764, 776, 784, and 940

3.0 WEIGHT AND BALANCE

The modified cargo basket is heavier than the original basket. Update the weight of the basket specified in ICA 764.90 as follows:

Item	Weight (net increase)
Basket Assembly Includes lid walkway, lid cover plates (2) and hardware	72.5 lb (+7.7 lb)
Cover Plate (Bottom) and hardware (5 places)	2.8 lb each (+14.0 lb)
Cover Plate (forward/aft) and hardware (2 places)	0.5 lb each (+1.0 lb)
Total	+22.7 lbs

The items listed above are located at the basket longitudinal and lateral centre of gravity specified in ICA764.90. The total increase in weight of the basket assembly, cover plates, and equipment mounting plates is to be subtracted from the maximum allowable cargo load of 300 lbs (136 kg). Removal or installation of cover plates or equipment requires the location to be determined to calculate the corresponding centre of gravity and moment arm in order to complete the weight and balance calculations for the aircraft.

4.0 COVER PLATES

Requirements for installation of cover plates:

- Cover plates or equipment mounting plates must be installed to cover all holes in the basket structure before flight, using all provided fastener locations in the basket structure. Fasteners shall be AN3 bolts or MS27039 #10 screws of appropriate length, with NAS1149F0363P or NAS1149F0332P washers, secured with MS21044N3 or MS21042-3 nuts
- Basket bottom and lid cutouts: cover plates shall be 0.12" minimum thickness, 6061-T6 aluminum.
- Basket forward and aft cutouts: cover plates shall be 0.050" minimum thickness, 6061-T6 aluminum, with minimum 0.38" wide flange on the bottom edge.

5.0 EQUIPMENT MOUNTING PLATES

Requirements for equipment mounting plates

- Equipment mounting plates must contain the equipment within the envelope of the basket structure.
- Structural installation of round or tear-drop shape, low profile, GPS or similar antenna on the lid is acceptable. Additional approval may be required for use of a GPS system.
- Equipment mounting plates without cutouts shall be 0.12" minimum thickness, 6061-T6 aluminum.
- Equipment mounting plates with cutouts shall be 0.25" minimum thickness, 6061-T6 aluminum. Cutouts in mounting plates for equipment shall be as tight as practical to the equipment.

ENGINEERING REPORT

ER940.90

EUROCOPTER AS350 & AS355 SERIES

QUICK RELEASE CARGO BASKET
LARGER CROSS SECTION, EXTENDED LENGTH

CAMERA PORT MODIFICATION – SAR POINT ENGINEERING

Prepared by: Jeff Clarke, CET

Revision 0, 04 February 2016

Aero Design Ltd.

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TABLE OF CONTENTS

1.0 INTRODUCTION

A geophysical survey operator has requested an extra large ski basket (model 940), that is modified with cutouts in the bottom, front and back in order for multiple cameras to have an unobstructed view out of the basket. Cutouts in the lid are required to allow installation of a GPS antenna oriented over the cameras.

2.0 REFERENCE TEXT

Aero Design Ltd. Engineering Report ER940.01, Revision 0, 20 October 2011, Quick Release Cargo Basket – Larger Cross Section, Extended Length, approved by E. Burgoin DAR 290M

-test for mounting provisions remains valid.

-loads used for test are duplicated for this modification

Aero Design Ltd. Lid Door Modification, 70402, Revision 2

Aero Design Ltd. Modification Drawings:

Basket Body Modification Drawing 94091, Revision 0

Basket Lid Modification Drawing 94092, Revision 0

3.0 BASIS OF CERTIFICATION

Modification to the cargo basket by adding cutouts does not affect the original basis of certification for the cargo basket.

4.0 LOAD FACTORS

FAR 27.561(b)(3)

	Ultimate Upward Emergency Landing Load Factor:	$n_{e\_up} := 1.5$
	Ultimate Forward Emergency Landing Load Factor:	$n_{e\_fwd} := 4.0$
	Ultimate Sideward Emergency Landing Load Factor:	$n_{e\_side} := 2.0$
	Ultimate Downward Emergency Landing Load Factor:	$n_{e\_down} := 4.0$
FAR 27.625	Fitting Factor (does not apply to articles being tested):	$n_{ff} := 1.15$
FAR 27.303	Safety Factor:	$n_{sf} := 1.5$
FAR 27.337(a)		
	Limit Positive Maneuvering LoadFactor:	$n_{man} := 3.5$
$n_{man\_ult} := n_{man} \cdot n_{sf}$	Ultimate Positive Maneuvering LoadFactor:	$n_{man\_ult} = 5.25$
	Limit Negative Maneuvering LoadFactor:	$n_{man\_n} := -1.0$
$n_{man\_neg\_u} := n_{man\_n} \cdot n_{sf}$	Ultimate Negative Maneuvering LoadFactor:	$n_{man\_neg\_u} = -1.5$

CRITICAL ULTIMATE LOAD FACTORS:

Downward:	Ultimate Positive Maneuvering LoadFactor:	$n_{man\_ult} = 5.25$
Forward:	Ultimate Forward Emergency Landing Load Factor:	$n_{e\_fwd} = 4.00$
Sideward:	Ultimate Sideward Emergency Landing Load Factor:	$n_{e\_side} = 2.00$
Upward:	Ultimate Upward Emergency Landing Load Factor:	$n_{e\_up} = 1.50$

Note: The basket is mounted below and to one side of the cabin. Forward deflection or failure in the emergency landing condition does not endanger the occupants. Likewise, Sideward and Upward deflection or failure of the basket in the emergency landing condition do not endanger the occupants.

Sideward and Upward Load Factors are used in the tests to ensure that the lid of the basket does not open in flight.

4.1 Inertia Loads

The positive maneuvering load is the critical condition.
From ER940.01, revision 0:

$W_{basket} := 73 \cdot lbf$ Weight of basket (including options, basic basket is less)

$W_{body} := 44 \cdot lbf$ Weight of basket body (without lid - as used in test).

$W_{cargo} := 300 \cdot lbf$ Weight of cargo (max)

$P_{man\_lim} := (W_{basket} + W_{cargo}) \cdot n_{man\_lim}$

$P_{man\_lim} = 1306 lbf$ Limit maneuvering load due to cargo and basket

$P_{man\_lim\_test} := P_{man\_lim} - 44 \cdot lbf$

$P_{man\_lim\_test} = 1262 lbf$ Limit load for test
(by including weight of basket already in place)

$P_{man\_ult} := P_{man\_lim} \cdot n_{sf}$

$P_{man\_ult} = 1958 lbf$ Ultimate maneuvering load due to cargo and basket

$P_{man\_ult\_test} := P_{man\_ult} - 44 \cdot lbf$

$P_{man\_ult\_test} = 1914 lbf$ Ultimate load for test
(by including weight of basket already in place)

The modified basket body is heavier, at 52 lbs. This weight includes the blanking plates installed in the bottom of the basket. The required test loads are reduced by 8 lbs.

4.2 Drag Loads

From ER940.01, revision 0:

$l_{basket} := 96.5 \cdot in$ Length of basket.

$w_{basket} := 25.5 \cdot in$ Width of basket.

$h_{basket} := 19.75 \cdot in$ Height of basket.

$A_f := 443 \cdot in^2$ Frontal Area of basket.

$A_p := l_{basket} \cdot w_{basket}$

$A_p = 2461 in^2$ Planar Area of basket.

$\frac{l_{basket}}{w_{basket}} = 3.8$ Fineness ratio of basket

$C_{Do} := 1.1$ Drag Coefficient of Basket, (overestimated)
(Ref. Hoerner, Fluid Dynamic Drag, Figure 22).

$\rho := 0.002378 \frac{slug}{ft^3}$ Density of air at Sea Level.

$V_{ne} := 155 \cdot knots$ Never-Exceed-Speed of AS350B3.
(Ref. AS350 TCDS.)
(Highest of AS350/AS355 Series.)

$V_d := \frac{V_{ne}}{0.9}$

$V_d = 172 knots$ Design Dive Speed of AS350B3

$P_{drag\_lim} := \frac{\rho}{2} \cdot V_d^2 \cdot A_f \cdot C_{Do}$

$P_{drag\_lim} = 340 lbf$ Limit Drag load on basket.

$P_{drag\_ult} := P_{drag\_lim} \cdot n_{sf}$

$P_{drag\_ult} = 510 lbf$ Ultimate Drag load on basket.

5.0 BASKET MODIFICATION – STRUCTURAL COMPLIANCE

Structural compliance is demonstrated by test. The entire cargo basket configuration is tested. A set of scrapped landing gear legs are used to simulate the helicopter attachments. The fittings, 78620, and mounting beams, 78633 and 78634 were mounted on the fixture in accordance with drawing 78602, and a basket body, 94011 as modified by drawing 94091, was installed on the beams.

The maneuvering load is applied by stacking bags of lead shot (25 lbs each) evenly over the bottom of the basket. The drag load is applied by pulling on a piece of plywood spanning the aft face of the basket with a rope through a block and tackle (6:1 advantage) attached to a spring scale.

The original basket has been demonstrated to support the limit loads without detrimental deformation and ultimate loads without failure. In order to prevent unnecessary damage or deformation to the modified basket, it will be tested to limit load to determine if there is detrimental deformation. If there is no detrimental deformation, then the modification has not unacceptably reduced the strength of the structure and can therefore be expected to support the same ultimate loads as the un-modified basket without failure.

5.1 Combined Maneuvering and Drag Load - Limit

Load tests were conducted on 04 February 2016, by Jeff Clarke and Jason Rekve.

The target limit load in the basket is 1254 Lb and drag tension of 340 Lb, to simulate the limit maneuvering condition in combination with limit drag load.

The basket was loaded with 51 bags of lead shot (1275 lbs). The rope was pulled at 60 lbs (360 lbs applied). The loads were applied for more than 3 seconds.

The loads were removed and the basket was checked for permanent deformation. There was no deformation found.

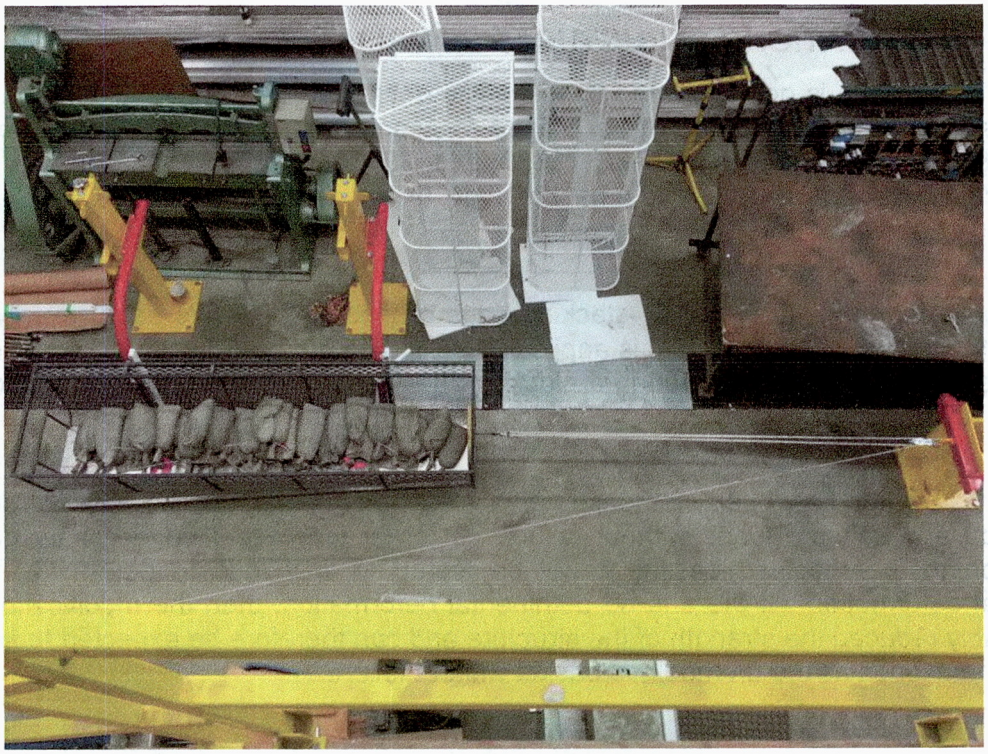

Figure 1 – Limit Maneuvering and Drag Loads

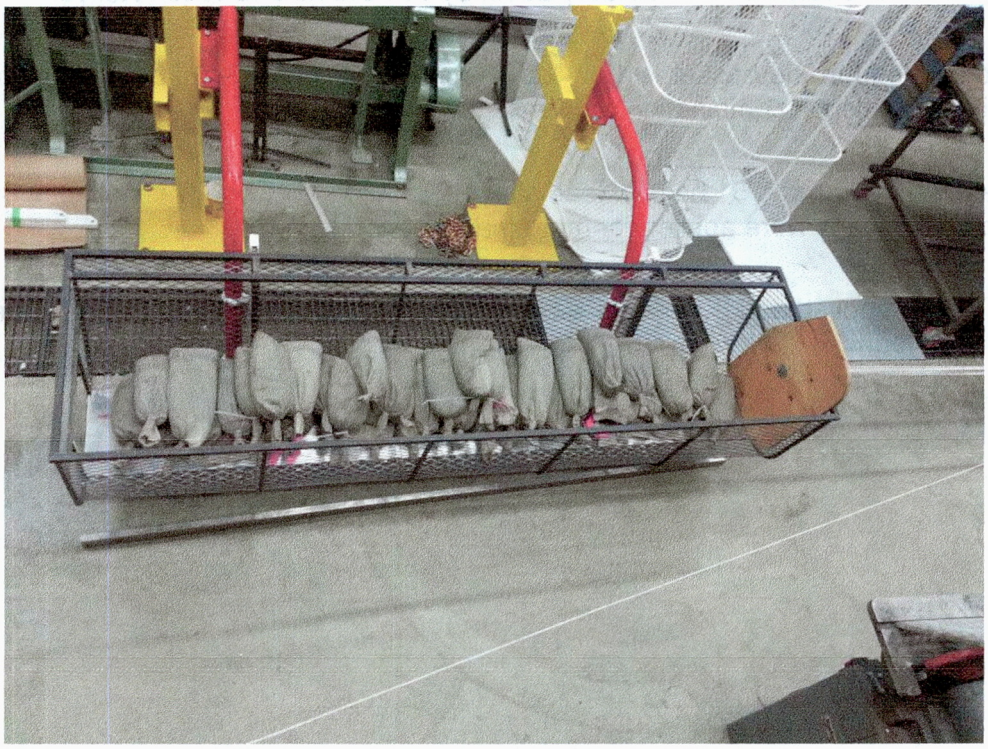

Figure 2 – Limit Maneuvering Load Detail

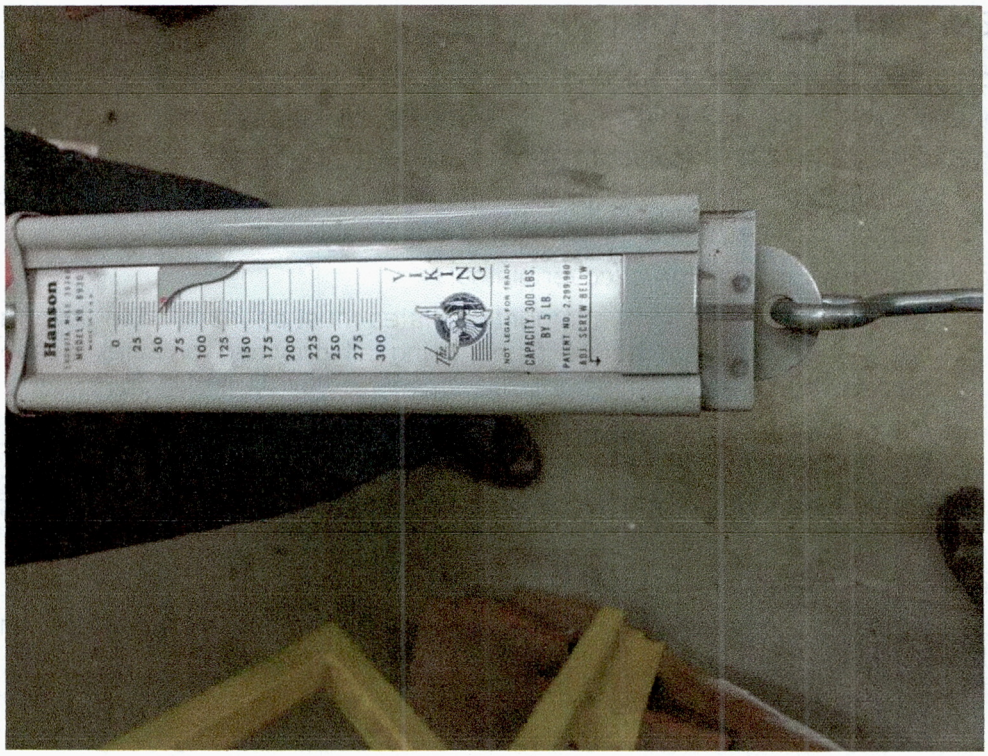

Figure 3 – Limit Drag Load Detail

5.2 Forward and Aft End Cutout

Modification of the forward and aft ends to add cutouts through the mesh, in accordance with drawing 94091, is similar to the front end cuout modification detailed on drawing 70406, revision 3, which is included on the approved modification document control list DCL704, revision 9. In this case there the cutout is aligned to the cutouts in the bottom of the basket. A cover made of 0.050" 6061-T6 aluminum sheet is bolted in place using through bushings in the support tubes to contain the cargo within the basket, with a flange on the bottom to ensure the cover does not deflect as it is unsupported on the bottom edge. The modified configuration is similar to the front end cutout configuration on the existing approval.

6.0 LID MODIFICATION – STRUCTURAL COMPLIANCE

Modification of the lid to add cutouts through the mesh, in accordance with drawing 94092, is similar to the lid door modification detailed on drawing 70402, revision 2, which is included on the approved modification document control list DCL704, revision 9. In this case there is no need for the cutout to be opened and closed regularly, so instead of a hinged door the cover is bolted in place using through bushings in the support tubes. A heavier 0.125" 6061-T6 aluminum cover (vs. 0.063" 3003 aluminum checker plate) is used given the wider opening of 7.5" vs. 6.0", to ensure the cover does not deflect if it is walked on during maintenance activities. The modified configuration is stronger the similar lid door configuration on the existing approval.

7.0 SERVICE INSTRUCTION SI 940.91

In order to convey information about and requirements for the modifications to the installer, service instruction SI 940.91 is provided. The information includes:

- Updated weight and balance information:
  - Additional weight due to the modifications, cover plates, and equipment mounting plates is subtracted from the allowable cargo load.
- Requirements for installation of cover plates:
  - Cover plates or equipment mounting plates must be installed to cover all holes in the basket structure before flight, using all provided bushing locations in the basket structure.
  - Cover plates shall be 0.12" minimum thickness, 6061-T6 aluminum, for cutouts in the bottom of the basket and cutouts in the lid.
  - Cover plates shall be 0.050" minimum thickness, 6061-T6 aluminum for forward and aft cutouts, with min 0.38" wide flange on bottom edge.
- Requirements for equipment mounting plates
  - Equipment mounting plates must contain the equipment within the envelope of the basket structure.
  - Structural installation of round or tear-drop shape, low profile, GPS or similar antenna on the lid is acceptable. Additional approval may be required for use of a GPS system.
  - Equipment mounting plates without cutouts shall be 0.12" minimum thickness, 6061-T6 aluminum.
  - Equipment mounting plates with cutouts shall be 0.25" minimum thickness, 6061-T6 aluminum. Cutouts in mounting plates for equipment shall be as tight as practical to the equipment.

SAR POINT

AERO Design Ltd.

ENGINEERING REPORT

ER940.01

EUROCOPTER AS350 & AS355 SERIES

QUICK RELEASE CARGO BASKET
LARGER CROSS SECTION, EXTENDED LENGTH

Prepared by: Steven Fahey, CET

Approved by: E. Burgoin, P.Eng., DAR 290M

Revision 0, 20 October 2011

AERO Design Ltd.
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Fax: (403) 250-8333

TABLE OF CONTENTS

1.0 INTRODUCTION

Operators of the existing AERO Design Quick Release Cargo Basket are requesting a basket with greater capacity while maintaining the existing mounting location. A new basket has been fabricated that is the same length as the original basket, but is taller and wider. The length is extended to 8 feet.

The load capacity of the basket is certified up to 300 lbs, having passed the tests shown herein.

This report also demonstrates that the mounting beams are capable of supporting a cargo basket loaded up to 300 lb.

2.0 REFERENCE TEXT

AERO Design Ltd. Reports ER764.01, ER76404, ER764.05
AERO Design Ltd. Drawings 78602, 78603, 94010, 94001.

3.0 BASIS OF CERTIFICATION

TCDS H-83 & H-87:
FAR part 27, dated October 2, 1964 Amendment 27-1 through 27-20, with exceptions as noted on the TCDS for the AS355NP (not applicable to this installation).

This report demonstrates that the installation of the Quick Release Cargo Basket (940 configuration) complies with the original basis of certification.

4.0 APPLICABILITY OF AIRWORTHINESS DIRECTIVES

Airworthiness Directives applicable to the AS350 series were reviewed, and none were found to affect this project.

5.0 LOADS FACTORS

FAR 27.561(b)(3)		
	Ultimate Upward Emergency Landing Load Factor:	$n_{e\_up} := 1.5$
	Ultimate Forward Emergency Landing Load Factor:	$n_{e\_fwd} := 4.0$
	Ultimate Sideward Emergency Landing Load Factor:	$n_{e\_side} := 2.0$
	Ultimate Downward Emergency Landing Load Factor:	$n_{e\_down} := 4.0$
FAR 27.625	Fitting Factor (does not apply to articles being tested):	$n_{ff} := 1.15$
FAR 27.303	Safety Factor:	$n_{sf} := 1.5$
FAR 27.337(a)		
	Limit Positive Maneuvering LoadFactor:	$n_{man} := 3.5$
$n_{man\_ult} := n_{man} \cdot n_{sf}$	Ultimate Positive Maneuvering LoadFactor:	$n_{man\_ult} = 5.25$
	Limit Negative Maneuvering LoadFactor:	$n_{man\_n} := -1.0$
$n_{man\_neg\_u} := n_{man\_n} \cdot n_{sf}$	Ultimate Negative Maneuvering LoadFactor:	$n_{man\_neg\_u} = -1.5$

CRITICAL ULTIMATE LOAD FACTORS:

Downward:	Ultimate Positive Maneuvering LoadFactor:	$n_{man\_ult} = 5.25$
Forward:	Ultimate Forward Emergency Landing Load Factor:	$n_{e\_fwd} = 4.00$
Sideward:	Ultimate Sideward Emergency Landing Load Factor:	$n_{e\_side} = 2.00$
Upward:	Ultimate Upward Emergency Landing Load Factor:	$n_{e\_up} = 1.50$

Note: The basket is mounted below and to one side of the cabin. Forward deflection or failure in the emergency landing condition does not endanger the occupants. Likewise, Sideward and Upward deflection or failure of the basket in the emergency landing condition do not endanger the occupants.

Sideward and Upward Load Factors are used in the tests to ensure that the lid of the basket does not open in flight.

5.1 Inertia Loads

The positive maneuvering load is the critical condition.

$W_{basket} := 73 \cdot lbf$ Weight of basket (including options, basic basket is less)

$W_{body} := 44 \cdot lbf$ Weight of basket body (without lid - as used in test).

$W_{cargo} := 300 \cdot lbf$ Weight of cargo (max)

$P_{man\_lim} := (W_{basket} + W_{cargo}) \cdot n_{man\_lim}$

52 bags.

$P_{man\_lim} = 1306 lbf$ Limit maneuvering load due to cargo and basket

$P_{man\_lim\_test} := P_{man\_lim} - 44 \cdot lbf$

$P_{man\_lim\_test} = 1262 lbf$ Limit load for test
(by including weight of basket already in place)

$P_{man\_ult} := P_{man\_lim} \cdot n_{sf}$

$P_{man\_ult} = 1958 lbf$ Ultimate maneuvering load due to cargo and basket

$P_{man\_ult\_test} := P_{man\_ult} - 44 \cdot lbf$

$P_{man\_ult\_test} = 1914 lbf$ Ultimate load for test
(by including weight of basket already in place)

5.2 Drag Loads

$l_{basket} := 96.5 \cdot in$ Length of basket.

$w_{basket} := 25.5 \cdot in$ Width of basket.

$h_{basket} := 19.75 \cdot in$ Height of basket.

$A_f := 443 \cdot in^2$ Frontal Area of basket.

$A_p := l_{basket} \cdot w_{basket}$

$A_p = 2461 in^2$ Planar Area of basket.

$\frac{l_{basket}}{w_{basket}} = 3.8$ Fineness ratio of basket

$C_{Do} := 1.1$ Drag Coefficient of Basket, (overestimated)
(Ref. Hoerner, Fluid Dynamic Drag, Figure 22).

$\rho := 0.002378 \frac{slug}{ft^3}$ Density of air at Sea Level.

$V_{ne} := 155 \cdot knots$ Never-Exceed-Speed of AS350B3.
(Ref. AS350 TCDS.)
(Highest of AS350/AS355 Series.)

$V_d := \frac{V_{ne}}{0.9}$

$V_d = 172 knots$ Design Dive Speed of AS350B3

$P_{drag\_lim} := \frac{\rho}{2} \cdot V_d^2 \cdot A_f \cdot C_{Do}$

$P_{drag\_lim} = 340 lbf$ Limit Drag load on basket.

$P_{drag\_ult} := P_{drag\_lim} \cdot n_{sf}$

$P_{drag\_ult} = 510 lbf$ Ultimate Drag load on basket.

6.0 STRUCTURAL COMPLIANCE

Structural compliance is demonstrated by test. The entire cargo basket configuration is tested. A set of scrapped landing gear legs and skid are used to simulate the helicopter attachments. The fittings, 78620, and mounting beams, 78633 and 78634 were mounted on the fixture in accordance with drawing 78602, and a basket body, 94011, was installed on the beams.

The maneuvering load is applied by stacking bags of lead shot (25 lbs each) evenly over the bottom of the basket. The drag load is applied by pulling on a piece of plywood spanning the front face of the basket with a come-along attached to a load cell.

6.1 Combined Maneuvering and Drag Load - Limit

The target limit load in the basket is 1262 Lb and chain tension of 340 Lb, to simulate the limit maneuvering condition in combination with limit drag load.

The basket was loaded with 51 bags of lead shot (1275 lbs). The chain was pulled at 340 lbs.

The loads were applied for more than 3 seconds. The loads were removed and the basket and beams checked for permanent deformation. There was no deformation found.

Figure 1 – Limit Maneuvering and Drag Loads

Figure 2 – Limit Maneuvering Load Detail

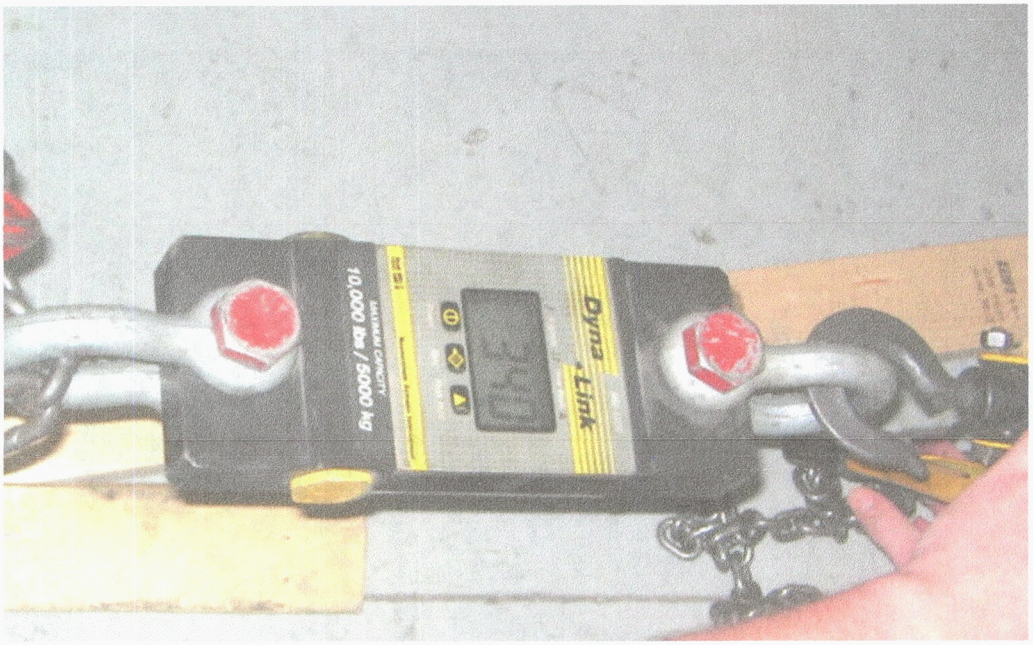


Figure 3 – Limit Drag Load Detail

6.2 Combined Maneuvering and Drag Load - Ultimate

The target ultimate load in the basket is 1914 Lb and chain tension of 510 Lb, to simulate the ultimate maneuvering condition in combination with ultimate drag load.

The basket was loaded with 77 bags of lead shot (1925 lbs). The chain was pulled at 520 lbs.

The loads were applied for more than 3 seconds. The loads were removed and the basket and beams checked for permanent deformation. There was no deformation found.

The basket and beams combined the ultimate maneuvering and drag loads for more than 3 seconds without failure. The basket and beams were inspected after removal of the loads. The basket showed no signs of permanent deformation.

Both of the mounting beams were damaged by ultimate load. The damage (shown in Figure 7 below) does not cause a risk of the basket coming off of the mounts. The damage does not reduce the ability of the basket or mounts to resist subsequent applications of limit load.

The cargo basket (940 configuration), mounting beams, and attachments are acceptable for a cargo load of 300 lbs.

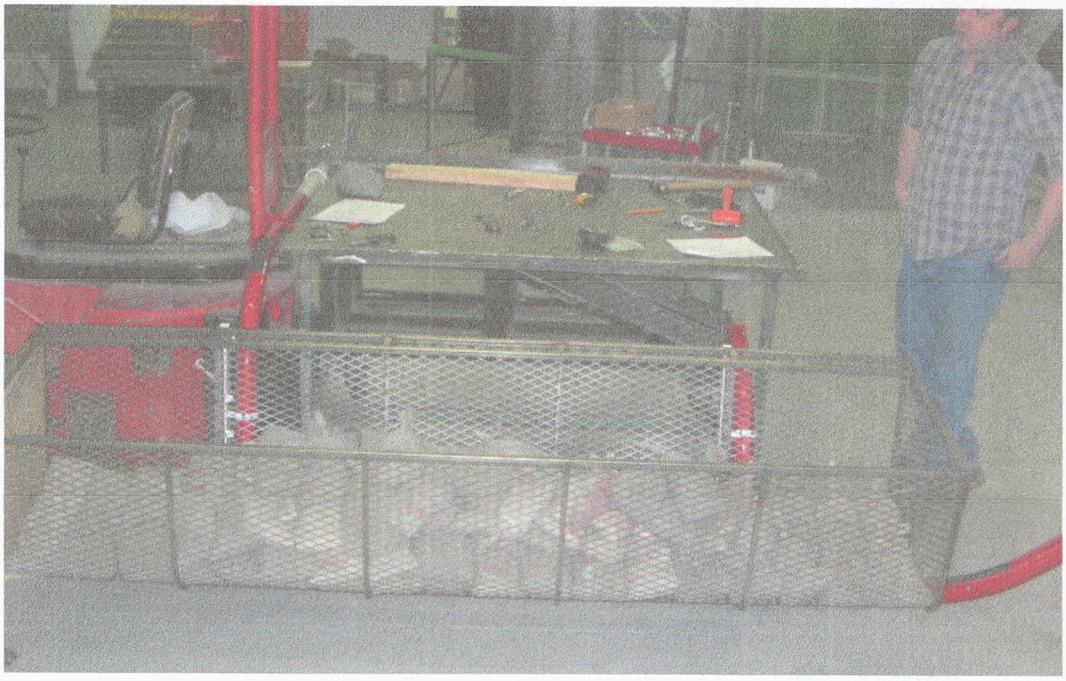


Figure 4 – Ultimate Maneuvering and Drag Loads

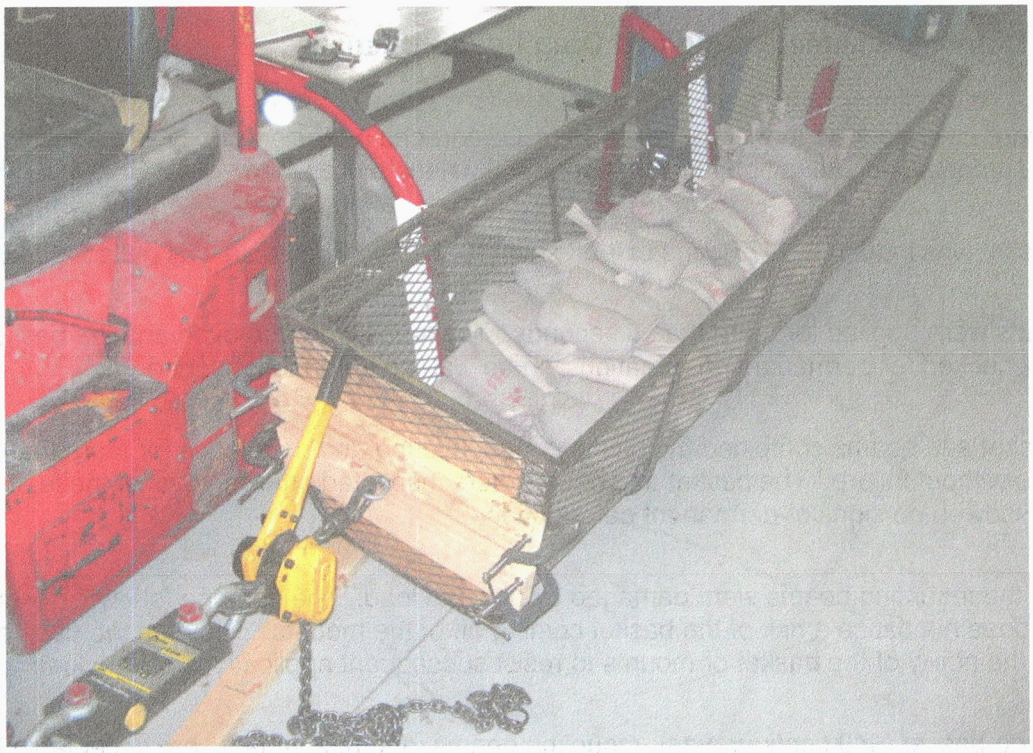


Figure 5 – Ultimate Maneuvering Load Detail

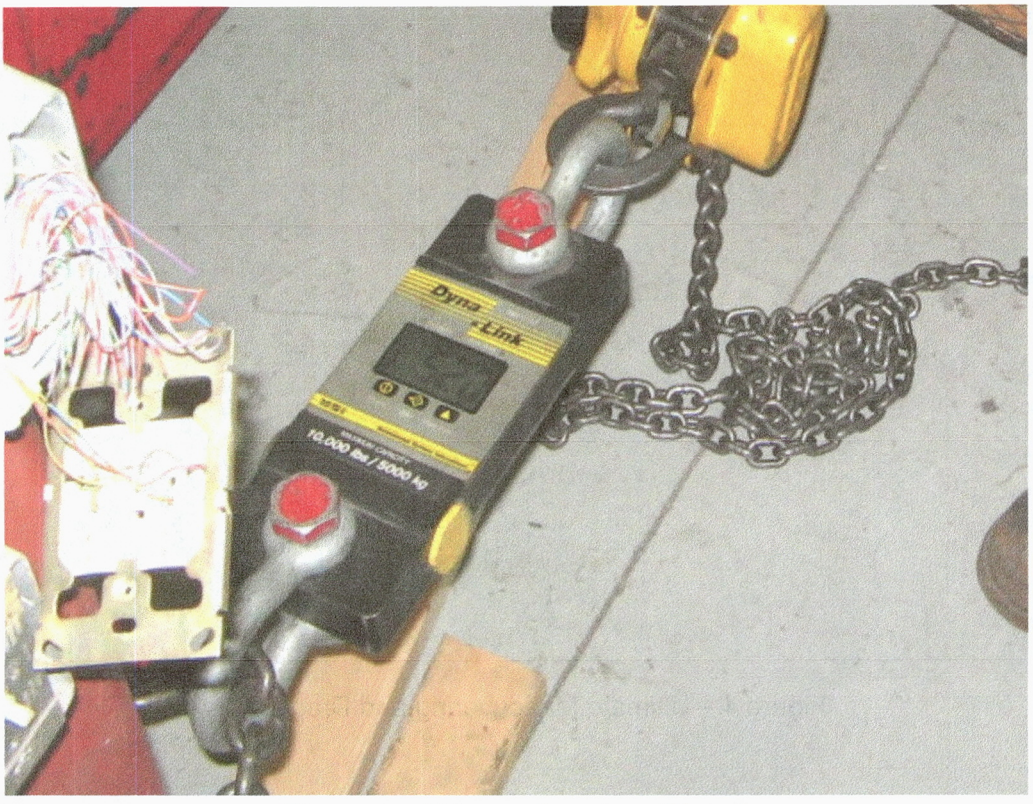


Figure 6 – Ultimate Drag Load Detail

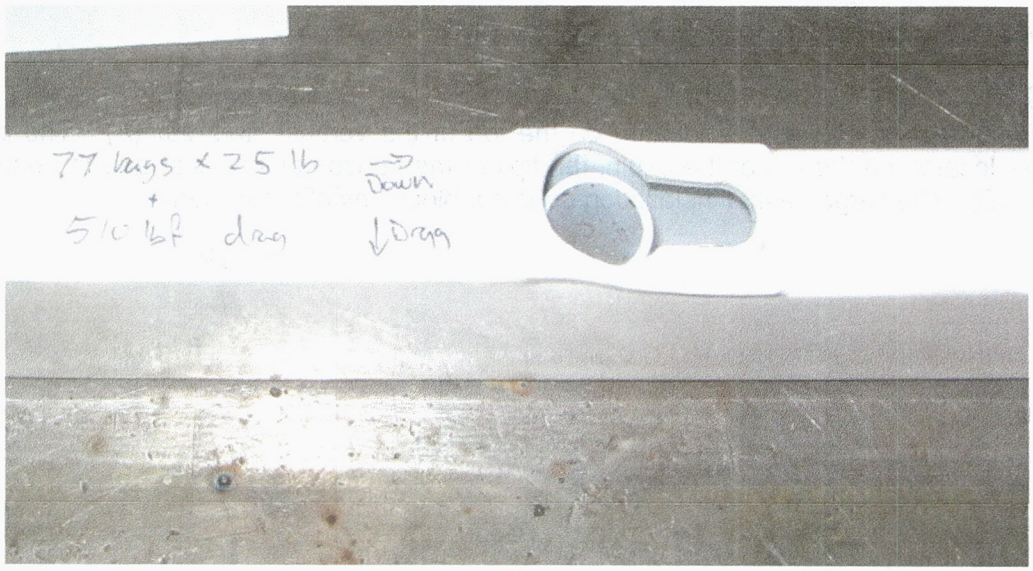


Figure 7 – Beam Deformation at Ultimate Load

At ultimate load the large upper end of the slot deforms. The stud is engaged at the narrow end of the slot, where it is not at risk of breaking out of the slot.

6.3 Forward Emergency Landing Condition

The basket is located below the cabin. Forward deflection of the basket does not endanger the occupants in a crash.

6.4 Sideward Emergency Landing Condition

Sideward deflection of the basket does not endanger the occupants. The basket lid must remain closed in the sideward loading condition. The handle has been demonstrated to remain closed under 2g sideward load, reference Engineering Report ER842.01.

6.5 Upward Emergency Landing Condition

Upward deflection of the basket does not endanger the occupants. The basket lid must remain closed in the upward loading condition. The handle system has been demonstrated to remain closed under 450 lbs upward load (1.5g x 300 lbs), reference Engineering Report ER842.01.

7.0 COMPLIANCE WITH FAR 27.1387 AND 27.1401

See Figure 1.

The anti-collision strobe light is located on the top of the vertical stabilizer (A). The position lights are located on the top of the cabin, the tips of the horizontal stabilizer and the end of the tailboom (B). The cargo basket installation does not block any of these lights.

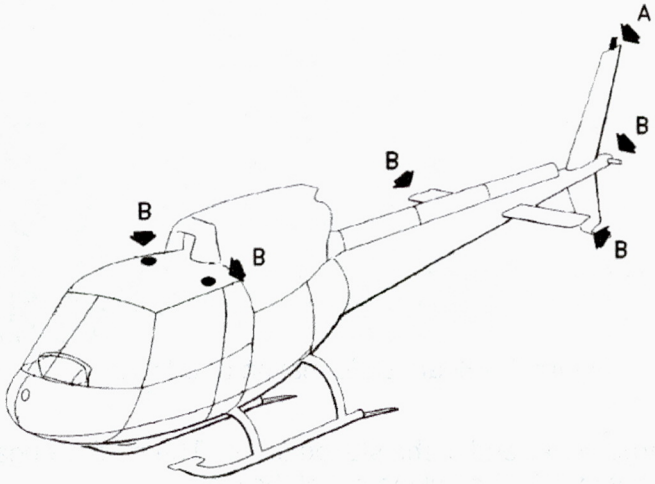


Figure 1 – Position / Anti-Collision Light Locations

Aero Design Ltd.

Work Order Control Sheet

Work Order#: 2014-89 **Date Opened:** 03 Dec 2014 **Title:** Fabication

Aircraft OEM: Multiple **Aircraft Model:** Multiple **Product Type:** Anchor Ring **Product Model:** N/A **Quantity:** 1

Work Order Contents

	Initial or N/A
Work Order/Build Sheets (Procedures Provided)	N/A
Additional Work Sheets (Standard Practice)	N/A
Drawings (See List Below)	JR
Parts Distribution Sheet	JR
Sub Component Tags	JR
Completed Certification (Original)	N/A
Time Sheet (R&D)	N/A
Notes	N/A

Build Sheet Contents

	Initial or N/A
Tasks Initialled	N/A
Dual Inspections Initialled	N/A

Drawing List

Drawing #	Rev #	Description	Initial or N/A
69703	0	Installation	JR

Component Completion

	As Instructed
Quantity Complete on This Work Order	1
Quantity Incomplete on This Work Order	N/A
Further Processing Required Before Release	N/A
Release to Stock as Components	N/A

Certification

	Initial or N/A
Form One Completed	N/A
Serviceable (Green) Tag Completed	N/A
In Process (Yellow) Tag Completed	N/A
Unserviceable (Red) Tag Completed	N/A
Parts Placed in Stores for Distribution	N/A

Additional Documentation

	Initial or N/A
Documentation of a minor change	N/A
Non-Conformance Report Required	N/A
Service Difficulty Report Required	N/A

Billing

	Initial or N/A
Local (Aero Design)	N/A
Research and Development	N/A
Third Party	JR

Traveller

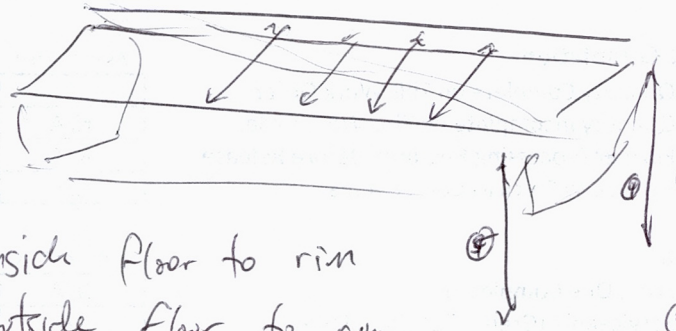
	Initial or N/A
Install data plate	

Work performed by: Print: David Martyn Sign: _____ SCA: AD05 Date: 03-Dec-14

ICC / Dual Inspection preformed by: Print: Jason Rekve Sign: _____ SCA: AD01 Date: 03-Dec-14

Work Order closed by: Print: Jason Rekve Sign: _____ SCA: AD01 Date: 03-Dec-14

① - Corner/corner attach
② @ attach hoops
③ @ center hoops



④ inside floor to rim
⑤ outside floor to rim

aft fwd.

0

① Square 100 3/8 - / 100 1/4
② 21 3/4 / 21 3/4 +
③ 21 13/16 / 21 13/16
④ 29 3/16 / 29 11/16
aft fwd
⑤ 27 9/16 / 28 1/16

1000 to bag. + 150 drag.

① 100 5/16 / 100 1/4
② 22 / 22 1/16
③ 22 1/8 / 22 3/16
④ 29 1/16 / 29 9/16
⑤ 26 9/16 / 26 9/16

500 lb. 20 bags

① 100 3/8 - / 100 1/4
② 21 7/8 / 21 7/8 +
③ 21 15/16 / 21 15/16
④ 29 1/8 / 29 3/4
⑤ 27 1/4 / 27 11/16

* NO MESH

0

① 100 5/16 / 100 1/4
② 21 3/4 / 21 13/16
③ 21 13/16 / 21 13/16
④ 29 1/8 / 29 11/16
⑤ 27 1/2 / 28 1/16

0

~~1300 lb 52 bags~~

① 100 5/16 / 100 1/4
② 21 13/16 / 21 7/8
③ 21 7/8 / 21 7/8
④ 29 1/8 / 29 11/16
⑤ 27 1/8 27 1/2

SAR POINT

5.1 Inertia Loads

The positive maneuvering load is the critical condition.

$W_{basket} := 73 \cdot lbf$ Weight of basket (including options, basic basket is less)

$W_{body} := 44 \cdot lbf$ Weight of basket body (without lid - as used in test).

$W_{cargo} := 300 \cdot lbf$ Weight of cargo (max)

$P_{man\_lim} := (W_{basket} + W_{cargo}) \cdot n_{man\_lim}$

$P_{man\_lim} = 1306 lbf$ Limit maneuvering load due to cargo and basket

52

$P_{man\_lim\_test} := P_{man\_lim} - 44 \cdot lbf$ 51 Bags

$P_{man\_lim\_test} = 1262 lbf$ Limit load for test
(by including weight of basket already in place)

1254

$P_{man\_ult} := P_{man\_lim} \cdot n_{sf}$

$P_{man\_ult} = 1958 lbf$ Ultimate maneuvering load due to cargo and basket

52

$P_{man\_ult\_test} := P_{man\_ult} - 44 \cdot lbf$

$P_{man\_ult\_test} = 1914 lbf$ Ultimate load for test
(by including weight of basket already in place) 77 bags.

1906

5.2 Drag Loads

$l_{basket} := 96.5 \cdot in$ Length of basket.

$w_{basket} := 25.5 \cdot in$ Width of basket.

$h_{basket} := 19.75 \cdot in$ Height of basket.

$A_f := 443 \cdot in^2$ Frontal Area of basket.

$A_p := l_{basket} \cdot w_{basket}$

$A_p = 2461 in^2$ Planar Area of basket.

$\frac{l_{basket}}{w_{basket}} = 3.8$ Fineness ratio of basket

$C_{Do} := 1.1$ Drag Coefficient of Basket, (overestimated)
(Ref. Hoerner, Fluid Dynamic Drag, Figure 22).

$\rho := 0.002378 \frac{slug}{ft^3}$ Density of air at Sea Level.

$V_{ne} := 155 \cdot knots$ Never-Exceed-Speed of AS350B3.
(Ref. AS350 TCDS.)
(Highest of AS350/AS355 Series.)

$V_d := \frac{V_{ne}}{0.9}$

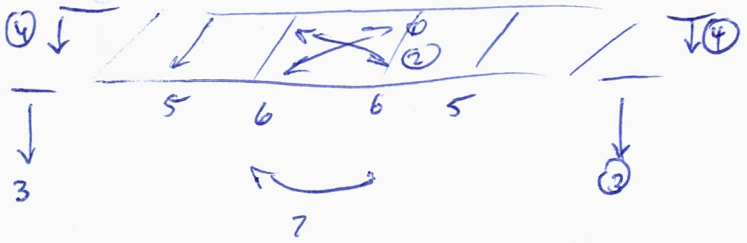
$V_d = 172 knots$ Design Dive Speed of AS350B3

$P_{drag\_lim} := \frac{\rho}{2} \cdot V_d^2 \cdot A_f \cdot C_{Do}$

$P_{drag\_lim} = 340 lbf$ Limit Drag load on basket.

$P_{drag\_ult} := P_{drag\_lim} \cdot n_{sf}$

$P_{drag\_ult} = 510 lbf$ Ultimate Drag load on basket.



⊙ load.	Aft	Fwd
①	100 1/4	② 100 1/4 +
③	27 1/4	27 5/8
4	29 3/16	29 11/16
5	21 13/16	21 13/16
6	21 13/16	21 7/8
7	MIN. GAP, ¢	

40 bags 1000 lb no drag.

①	100 1/4	② 100 1/4 +
3	26 5/8	27 1/16
4	29 1/16	29 11/16
5	21 7/8	21 7/8
6	21 15/16	21 15/16

⊙ load	Aft	~~Aft~~	Fwd
①	100 1/4	② 100 1/4	
③	27 1/8	27 9/16	
④	29 3/16	29 11/16	
⑤	21 13/16	21 13/16	
⑥	21 13/16	21 7/8	
⑦	MIN GAP		

51 bags = 1275 + drag

①	100 1/4	② 100 1/4 + ✓
③	26 7/16	26 13/16
④	29 1/8	29 5/8
⑤	21 15/16	21 15/16
⑥	22	22
⑦	~1/8 gap center	/ 1/4 on back

⊙

①	100 1/4	② 100 1/4 +
③	27	27 3/8
④	29 1/8 +	29 5/8 +
⑤	21 13/16	21 13/16
⑥	21 7/8	21 7/8

⑦ straight / min gap.

Basket measures square / true
differences come from fixture